ANNUAL REPORT

OF THE

DEPARTMENT OF THE INTERIOR

FOR THE

Fiscal Year ending March 31, 1916

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
PRINTED BY J. DE L. TACHÉ,
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1916

[No. 25—1917.]

To Field Marshal His Royal Highness Prince Arthur William Patrick Albert, Duke of Connaught and Strathearn, K.G., K.T., K.P., etc., etc., Governor General and Commander in Chief of the Dominion of Canada.

May it Please Your Royal Highness:

The undersigned has the honour to lay before Your Royal Highness the report of the transactions of the Department of the Interior for the fiscal year ending March 31, 1916.

Respectfully submitted,

W. J. ROCHE,
Minister of the Interior.

Ottawa, September 1, 1916.

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DEPARTMENT OF THE INTERIOR, CANADA

1916

ROLL OF HONOUR

List of Employees, Inside Service, enlisted for Overseas Duty.

Name.	Rank and Branch.
William Geo. Addison	3A Top. Surveys
William Anderson	2A Geographer's
Edwin Constant Arbogast	2B Observatory
MacKay Bennett Atchison	3A Ry. Lands
William S. H. Bernard	2B Secretary's
William Brace	2B Ld. Patents
William Archibald Blue	2B M. L. & Y.
Harry Alfred Bradley	2B Dom. Parks
M. C. L. Baril	3A Top. Surveys
William Roscoe Burrill	3A Accounts
Robert Isaac Baxter	3A Accounts
Harold Ord Bompas	3B Registration
Fred William Carson	2B Stationery
John Cecil Cowan	3A Dom. Lands
Jonathan Henry Corry	2B Ld. Patents
Geo. H. A. Collins	2B Top. Surveys
Ernest Wm. Clarke	3B Registration
Donald Grant Cameron	2B M. L. & Y.
Herbert William Cannell	2A Top. Surveys
John Bernard Corcoran	2B M. L. & Y.
Joseph Anthony Dowd	3A T. & G.
Stanley Preston Eagleson	3B Registration
Harry Lisle Edwards	2A Dom. Lands
Oliver Emond	3B Registration
Chas. Colbourne Fitzgerald	2B Top. Surveys
Edward T. B. Gillmore	2A Top. Surveys
Walter Cunard Gillis	2B M. L. & Y.
William Fleming Gray	Sorter Immigration
Wm. Edgar Hunter	2B Irrigation
John Alfred Huggins	2B Accounts
Claude Wm. Hull	2B Ry. Lands
Edward Wm. Harrison	2B Top. Surveys
Henry W. R. Humphreys	2B T. & G.
James Rayside Hearnden	2B Immigration
Chas. Walter Hill	Mess. Ld. Patents
Thos. Samuel Heaslip	3A Minister's Office
Frederick B. Inkster	2A Geographer's
Robert Allison Ince	3B T. & G.
John Geo. Landsky	3B Ld. Patents
William Roger Latimer	3A Ry. Lands
Robert Allen Lawe	2B Ry. Lands
John Ramsay Merrifield	Mess. Sur. Rec.
Reginald Thos. Moore	3A Sur. Rec.
James Forest Curry Maunder	2B Ld. Patents
Andrew Howard Miller	2B Top. Surveys
Theophile Joseph Morin	2B Immigration
Edward Thomas Mennie	2B Ry. Lands
John Patrick McElligott	2B Geographer's
Norman Richard McPhail	2B Top. Surveys
Andrew Gorden McLennan	3A M. L. & Y.
Alexander McCracken	3A Registration
Frank Clarence McGee	2A Dom. Lands
Daniel Cameron McDougall	2B Irrigation
Alexander Thos. McFarlane	3A Accounts
Alexander Fenton McCullough	Sorter Registration
John McDonnell	2B Observatory
John Mehagan	3B T. & G.
John Douglas Northrup	3B Registration
Chas. Olmsted	3A Ld. Patents
Edward Rosser Owen	2B Top. Surveys
Wm. Joseph O'Grady	2B T. & G.
Albert Abraham Paquette	3A Sur. Rec.
Jean Gaston C. R. Pratte	3A Registration
Alfred Pegg	Mess. Top. Surveys
Thos. Harold Parker	2B Observatory
Roy Peaker	3A M. L. & Y.

Name.	Rank and Branch.
Arthur Achille Pinard	2A Dom. Parks
Napoleon Emile Pelletier	3A Accounts
Bertie James Roe	2B Top. Surveys
J. B. F. Racette	2B Registration
Robert Summers Stronach	2A Dom. Parks
James Francis Shaw	3B Accounts
Robert Oscar Spreckley	2A Top. Surveys
Wm. Jackson Small Sharp	2B T. & G.
Alfred John Smith	Packer Immigration
John Harold Stothers	2B T. & G.
James Stewart Stout	3B T. & G.
Geo. A. S. Sparkes	1B Dom. Lands
Wm. Thos. Slade	3B Ry. Lands
J. W. Summers	Mess. Water Power
Lorne Bryson Taylor	2B Ld. Patents
Norman Albert Thompson	2B Top. Surveys
Paul Emile Trudel	2B Ld. Patents
Perry Alexander Wood	2B Ry. Lands
John Lawrence Williams	2B Dom. Lands
Edward Ronald Williams	3A Top. Surveys
Walter James Linford	2B Top. Surveys
Wm. James Peaker	2A Top. Surveys
Jos. Albert Cadieux	2B Registration
Franklin Bell Eagleson	2B Registration

List of Employees, Outside Service, enlisted for Overseas Duty.

Name.	Rank.	Place.
J. D. Allison	Mess. Parks Branch	Ottawa
Florent Georges Arnold	Dom. Lands Agent	Regina
G. W. Anderson	Clk. Dom. Lands Office	Prince Albert
Cecil Wm. Armstrong	Clk. Dom. Lands Office	Saskatoon
F. M. Allan	Clk. Top. Surveys	Ottawa
Arthur Allanach	Stenographer, Jasper Park	Jasper
John Playfair Alexander	Asst. Rocky Mtns. Forest Res.	Pincher Creek
T. Anderson	Clk. Observatory	Ottawa
Cecil Howard Anderson	Sub-Agent	Le Pas
H. Broadbent	Clk. Top. Surveys	Ottawa
Geo. Edwin Bothwell	Forest Asst.	Edmonton
Thomas Baxter Blacklock	Clk. Dom. Lands Office	Calgary
Robert H. Burton	Clk. Dom. Lands Office	Battleford
Allan B. Beddoe	Clk. Observatory	Ottawa
Pat. Jos. Barry	Clk. Man. Hydro. Survey	Winnipeg
David H. Boles	Clk. Dom. Lands Office	Edmonton
Arthur L. Bacon	Clk. Dom. Lands Office	Calgary
Arthur M. Blaikie	Messenger	Yukon
George G. Blackstock	Sub-Agent	Kindersley
C. Bott	Clk. Top. Surveys	Ottawa
W. H. Boyd	Clk. Immigration Office	Winnipeg
P. G. Bertram	Clk. Immigration Office	Winnipeg
Dr. Geo. E. Beauchamp	Med. Officer Immigration Office	Montreal
Floyd Kellogg Beach	Engineer, Irrigation Office	Calgary
John B. Brophy	Draughtsman, Forestry Branch	Ottawa
W. R. Barge	Immigration Insp., Pacific Hgy.	British Columbia
Loren Lewis Brown	Engineer Forestry Office	Montreal
Fred. George Bailey	Clk. Dom. Lands Office	Humboldt
Francis Robert Burfield	Engineer, Irrigation	Calgary
William James Boyd	Forester	Calgary
Richard C. Cain	Clk. Dom. Lands Office	Calgary
Richard Cox	Clk. Dom. Lands Office	Calgary
John A. Currie	Sr. Asst. Dom. Lands Office	Maple Creek
Alexander B. Clark	Clk. Dom. Lands Office	Calgary
C. V. Craik	Asst. Engineer, Irrigation	Calgary
E. J. Cotton	Rider, Buffalo Park	Wainwright
Joseph Cawthorn	Clk. Irrigation Office	Calgary

Name.	Rank.	Place.
Wm. Boyd Campbell	Asst. Supt. Forestry	Montreal
E. E. W. Conant	Forest Ranger	Nicola
Cyril Geo. Child	Asst. Engineer	Banff
C. P. Cotton	Clk. Hydro. Survey	Vancouver
Robert John Coulter	Clk. Dom. Lands Office	Battleford
Philip A. J. Cottan	Sr. Asst. Dom. Lands Office	Prince Albert
C. E. B. Corbould	Asst. Engineer, Water Power	Vancouver
Charles Blanchard Cowley	Clerk	Grouard
Eric Bryce Chalmers	Clk. Man. Hydro. Survey	Winnipeg
Robert Cruickshank	Sr. Asst. Dom. Lands Office	Grouard
Kenneth G. Chisholm	Engineer, Water Power	Kamloops
Arnold Z. Choquette	Clk. Dom. Lands Office	Calgary
Harry W. Cheney	Clk. Irrigation	Ottawa
G. W. Clarke	Sub. Foreman	Banff
Hobart Rodney Carscallen	Engineer, Irrigation	Calgary
Endre Johanneson Cleven	Intrepreter	Winnipeg
Dr. E. Douglas	Med. Officer, Immigration	Halifax
R. R. de Puyjalon	Clk. Top. Survey	Ottawa
P. L. Dunne	Clk. Top. Survey	Ottawa
C. H. De Kam	Asst. Engineer, Irrigation	Calgary
W. E. Dow	Draughtsman, Irrigation Office	Calgary
J. C. de Balinhard	Homestead Inspector	Yorkton
W. E. Dexter	Clk. Forestry Branch	Ottawa
S. M. Duncan	Clk. Top. Surveys	Ottawa
James C. Donaldson	Machine Operator Water Power	Ottawa
Eyre Morton Dann	Engineer	Vancouver
L. H. de Puyjalon	Clk. Observatory	Ottawa
Charles George Davis	Stenographer, Immg'n Office	Winnipeg
G. A. R. Emery	Rodman Field Staff Water Power	
Leo. G. Esther	Interpreter, Immigration Office	Halifax
A. E. Elias	Clk. Ry. Lands	Ottawa
George R. Elliott	Asst. Hydro. Irrigation	Calgary
William Henry Evans	Dept. Agent	Canmore
F. W. W. Fane	Homestead Inspector	Edmonton
J. W. Forbes	Acct. Immigration Office	Winnipeg
Frank W. Fraser	Draughtsman, Forestry	Montreal
G. G. Fuller	Forest Ranger	Bottrel
Howard F. Fincham	Acct. Dom. Lands Office	Humboldt
Edward V. Frith	Clk. Dom. Lands Office	Calgary
John Ford	Blacksmith	Banff
Dr. F. A. R. Gow	Supt. Det. Hospital	Halifax
Frank Glover	Sub-Agent	Edson
R. Grant	Clk. Top. Surveys	Ottawa
E. Gordon	Clk. Immigration	Montreal
Dalton Ivan Greene	Clk. Dom. Lands Office	Red Deer
Leo John Gleeson	Asst. Engineer, Irrigation	Calgary
D. O. Gill	Clk. Hydro. Survey	Vancouver
Duff Boyd Gow	Engineer, Water Power	Winnipeg
Andrew Wellington Gray	Engineer	Banff
Walter S. Gordon	Timber Inspector	Neepawa
Wm. Godfrey	Clk. Dom. Lands Office	Prince Albert
H. Gauthier	Clk. Top. Surveys	Ottawa
Robert Henry Goodchild	Insp. Engineer, Irrigation Office	Calgary
Revd. J. V. Gaudet	Colonization Agent	Adamsville, N.B.
Knute Haddeland	Interpreter	Winnipeg
Charles B. Hornby	Acct. Irrigation	Calgary
Cyril L. Harris	Asst. Timekeeper	Banff
Louis A. Hill	Fireman	Banff
James Hepburn	Clk. Dom. Lands Office	Prince Albert
Edward St. G. Hodson	Sub-Agent	Rosthern
H. Horwood	Clk. Dom. Lands Office	Prince Albert
E. W. Hughes	Hydro. Irrigation	Calgary

Name.	Rank.	Place.
Paul Howard	Asst. Immigration Agent	Vancouver
J. J. Harron	Forest Ranger	Entrance
Albert Harle Hall	Clk. Dom. Lands Office	Swift Current
Ulric I. Isabelle	Clk. Dom. Lands Office	Maple Creek
E. McD. Johnston	Clk. Immigration Office	Winnipeg
John Henry Jones	Engineer, Irrigation	Calgary
Alfred Jolivet	Clerk	Banff
P. J. Jennings	Engineer, Irrigation	Calgary
Alex. Kaine	Immigration Inspector	Fort Francis
Eardley G. Koyl	Clk. Dom. Lands Office	Saskatoon
H. S. Kerby	Clk. Irrigation Office	Calgary
H. E. M. Kensit	Engineer, Water Power	Ottawa
George W. Knight	Fire and Game Warden	Waterton Lakes
P. T. Kane	Press Feeder, Top. Surveys	Ottawa
Thomas Julien Kay	Clk. Parks Office	Banff
Kimball F. Keeping	Clk. Observatory	Ottawa
J. A. Laferriere	Clk. Immigration Office	Winnipeg
H. W. Leacock	Clerk	Banff
H. O. Leach	Clk. Water Power	Winnipeg
William Leckie	Clk. Dom. Lands Office	Maple Creek
R. W. Langford	Fire Ranger	Jasper
W. A. Lyndon	Forest Ranger	Pincher Creek
T. F. Lynch	Clk. Dom. Lands Office	Calgary
A. F. Langdon	Clk. Top. Surveys	Ottawa
P. G. Leman	Forest Ranger	Bow River Res.
John Joseph Letcher	Fire and Game Warden	Banff
Geo. Hugh McCallum	Surveyor Observatory	Ottawa
A. J. Macmillan	Clk. Top. Surveys	Ottawa
Murdoch Alexander Macinnes	Agent Dom. Lands	Saskatoon
Allan McConnachie	Homestead Inspector	Edmonton
William Stanley McClenahan	Clk. Observatory	Ottawa
William B. McLellan	Clk. Dom. Lands Office	Dauphin
E. S. McMillan	Clk. Irrigation Office	Calgary
Geo. McMorris	Homestead Inspector	Red Deer
David D. McAllister	Clk. Dom. Lands Office	Saskatoon
J. R. McNeil	Immigration Inspector	Bridgeburg, Ont.
Jas. Anderson MacKinnon	Clerk	Dawson
Arthur S. MacLean	Agent	Grande Prairie
John Alexander McDonald	Homestead Inspector	Swift Current
Dr. Neil M. McNeil	Med. Officer	Prince Rupert
Percy Morris	Clk. Dom. Lands Office	Edmonton
J. R. Mellor	Draughtsman	Banff
H. L. Mahaffy	Asst. Engineer Water Power	Winnipeg
H. L. Mainguy	Clk. Water Power	Ottawa
Dr. A. S. Munro	Med. Officer, Immigration	Vancouver
R. N. Monro	Clk. Immigration Office	Winnipeg
W. C. Murdie	Clk. Observatory	Ottawa
Guy L. Mott	Clk. Immigration	Halifax
C. H. Mason	Asst. Engineer B.C. Hydro. Survey	Vancouver
Frederick Edgar Maunder	Supt. Dom. Parks	Revelstoke
Marvin Willin Maxwell	Testing Machine Operator	Montreal
Fred James Moore	Asst. Engineer Man. Hydro. Survey	Winnipeg
James Thomas Moxon	Acct. Dom. Lands Office	Saskatoon
G. H. Nettleton	Clk. Irrigation Office	Calgary
David Nelson	Immigration Inspector	Vancouver
William A. Neale	Immigration, Porter -	Winnipeg
F. E. Naftel	Clk. Immigration Office	Vancouver
Edward Wm. Nesham	Surveyor Observatory	Ottawa
S. C. O'Grady	Engineer, Hydro. Survey	Winnipeg
Robert H. Palmer	Chief Fire Ranger	Edmonton
J. A. Pounder	Surveyor Observatory	Ottawa
J. C. Patterson	Instrument Man	Jasper

Name.	Rank.	Place.
Allan E. Parlow	Forest Asst.	Kamloops
C. H. Price	Clk. Dom. Lands Office	Battleford
C. Perry	Clk. Immigration Office	Winnipeg
Alexander Pirie	Asst. Engineer Man. Hydro. Survey	Winnipeg
John McNeil Paul	Asst. Engineer, Irrigation	Calgary
Dr. H. B. Rogers	Asst. Immigration Agent	Vancouver
Charles W. Robinson	Sub-Agent	Munson
S. Maynard Rogers	Supt. Jasper Park	Jasper, Alta.
W. B. Rose	Clk. Immigration Office	Winnipeg
Colin Esdaile Richardson	Engineer	Vancouver
Albert Clark Ross	Clk. Immigration Office	Winnipeg
John Morrison Riddell	Surveyors Asst. Observatory	Ottawa
Dr. John Rankine	Actg. Med. Supt. Det. Hospital	Halifax
John Thoburn Rose	Engineer Man. Hydro. Survey	Winnipeg
Geo. S. Raley	Surveyor Observatory	Ottawa
Frank Bruce Robertson	Forester Forestry Branch	Ottawa
Dr. Robert Thomas Rutherford	Med. Inspector	Ellis Island, New York
B. C. Seale	Clk. Dom. Lands Office	Prince Albert
H. Souillard	Cook Immigration Office	Montreal
A. B. Spence	Clk. Dom. Lands Office	Edmonton
G. Shore	Clk. Ry. Lands	Ottawa
R. Shehyn	Clk. Top. Surveys	Ottawa
E. J. Steljes	Clk. Immigration Office	Winnipeg
Harold Charles Burton Smith	Forest Asst.	Kamloops
J. Stewart	Janitor	Banff
John N. Stinson	Engineer	Banff
Alfred P. Smith	Clk. Man. Hydro. Survey	Winnipeg
Lee N. Seaman	Asst. Engineer, Forestry	Montreal
Norman McLeod Sutherland	Irrigation	Calgary
Henry Denne St. A. Smith	Asst. Engineer Irrigation	Calgary
George Hamilton Scougall	Sub-Agent, Dom. Lands	McLeod, Alta.
Alfred. T. Staines	Clk. Dom. Lands Office	Medicine Hat
Henry I. Stevenson	Forest Supervisor	Roblin
W. F. Savignac	Clk. Top. Surveys	Ottawa
Frank Scrasse	Immigration Agent and Dom. Lands Sub-Agent	Swan River
Wm. Leonard Scandrett	Forest Supervisor	Kamloops
Francis Slaney Smith	Draughtsman, Man. Hydro. Survey	Winnipeg
Leslie Ernest M. Shenton	Draughtsman, Irrigation Office	Calgary
James Noel Simpson	Sub-Agent Dom. Lands	Canora
Clarence Gordon Simpson	Clk. Immigration	Winnipeg
Stephen Sales	Interpreter	Winnipeg
William F. Tuthill	Asst. Acct. Dom. Lands Office	Edmonton
Donald M. Trapnell	Asst. Chemist For. Office	Montreal
J. H. Turner	Clk. Dom. Lands Office	Calgary
Donald Thomson	Clk. Dom. Lands Office	Lethbridge
Ernest H. Tredcroft	Asst. Engineer B.C. Hydro. Survey	Vancouver
Harry B. R. Thompson	Hydro. Irrigation Office	Calgary
Geo. H. Taylor	Clk. Immigration Office	Winnipeg
P. F. R. Troop	Clk. Observatory	Ottawa
Stanley T. Vickerman	Rodman	Jasper
Charles Eric West	Asst. Engineer Parks Branch	Ottawa
Herbert John Wade	Clk. Dom. Lands Office	Maple Creek
William T. White	Clk. Irrigation Office	Calgary
Henry Wey	Clk. Forestry Office	Kamloops
Sidney Wood	Porter, Immigration Office	Winnipeg
William Harry Wallace	Draughtsman, Man. Hydro. Survey	Winnipeg
Joseph Webb	Clk. Dom. Lands Office	Edmonton
Arthur E. Wyatt	Clk. Forestry Office	Indian Head
F. Weskett	Mess. Ry. Lands Branch	Ottawa
H. Wanless	Clk. Top. Surveys	Ottawa

Name.	Rank.	Place.
B. C. Wilson	Clk. Dom. Lands Office	Swift Current
George Spence Wallis	Asst. to Photographer, Observatory	Ottawa
Victor Chivers Wilson	Clk. Dom. Lands Office	Swift Current
George Herbert Whyte	Engineer, Irrigation	Calgary
Louis Gorham Young	Acct. Dom. Lands Office	Medicine Hat
John Ethan Caughey	Engineer, Irrigation	Calgary
Harry Edwards Clements	Clerk, Dom. Lands Office	Moosejaw
Peter Kay	Clerk, Dom. Lands Office	Moosejaw
H. M. Barton	Surveyor Observatory	Ottawa
Owen Hugo Hoover	Clerk, Irrigation	Calgary
Wilfred Ernest Dow	Clerk, Irrigation	Calgary
Wm. Colborne Sanders Switzer	Homestead Inspector	Medicine Hat
Asgeir Fjeldsted	Sub-Agent Dom. Lands	Arborg, Manitoba
Thos. Woodman	Clk. Lesser Slave For. Res.	Sawridge, Alta.
Wilfred Gordon Robertson	Clk. Observatory	Ottawa
William Banks	Sub-Agent Dom. Lands	Gull Lake

Names of Immigration Officials in the British Isles and in France who have enlisted for Active Military Service in Europe or in the British Isles.

Name.	Rank.	Place.	Salary.
G. G. Archibald	Agent	Aberdeen	$1,800 00
N. Andovie	Messenger	London	359 32
W. Bond	Messenger	Liverpool	420 00
F. Campbell	Agent	Birmingham	1,800 00
D. Campbell	Clerk	London	1,200 00
F. O. Chapman	Clerk	London	1,800 00
D. B. Davies	Clerk	Cardiff	900 00
L. Davies	Clerk	Exeter	480 00
F. Doyle	Messenger	London	359 32
M. Doyle	Messenger	Dublin	253 08
E. G. Everett	Clerk	London	1,300 00
P. Foursin	Clerk	Paris, France	1,000 00
Wm. Griffith	Agent	Wales	1,500 00
John Hay	Clerk	Glasgow	480 00
A. G. Hannell	Agt. on Motor Car	London	600 00
G. Higgs	Messenger	London	199 16
A. L. Jerman	Messenger	Peterborough	253 08
J. H. Lough	Clerk	Liverpool	1,200 00
F. Martin	Clerk	Paris, France	660 00
T. J. Mathews	Clerk	Birmingham	420 00
R. A. Miller	Auto Driver	London	632 64
J. Mullan	Clerk	Belfast	600 00
H. McNeight	Messenger	Liverpool	200 00
A. O'Kelly	Clerk	London	1,800 00
*E. Peddle	Clerk	London	
*E. B. Price	Clerk	London	
S. W. Pugh	Agent	Cardiff	3,500 00
Wm. Story	Clerk	Dublin	500 00
J. H. Stanford	Clerk	London	1,800 00

*Killed at the Front.

Name.	Rank.	Place.	Salary.
W. Webb	Spec. Agent, for	Ireland	$1,000 00
A. Young	Messenger	London	359 32

NOTE.—Excepting G. G. Archibald who gets his full Civil Pay, all others are paid their Civil Salary less military pay.

List of Officials who have been killed at the war.

Name.	Rank and Branch.	Place.
M. C. L. Baril	Clerk Top. Surveys	Ottawa
Robert Isaac Baxter	Clerk Accounts	Ottawa
J. B. F. Racette	Clerk Registration	Ottawa
G. Fitzgibbons	Clerk Dom. Lands Office	Calgary
C. P. Cotton	Clerk Hydrographic Survey	Vancouver
E. Peddle	Clerk Immigration	London
E. B. Price	Clerk Immigration	London

List of Officials who have been taken prisoners.

Name.	Rank and Branch.	Place.
Allan B. Beddoe	Clerk Observatory	Ottawa

These seven pages contain the names only of those enlisting, killed, or taken prisoner up to the time of going to press.

REPORT

OF THE

DEPARTMENT OF THE INTERIOR

1915-1916

The Hon. W. J. Roche,
Minister of the Interior,
Ottawa.

I have the honour to submit the forty-third Annual Report of the Department of the Interior, for the twelve months ending the 31st of March, 1916.

During the past year conditions throughout the West have improved quite materially. Business has been much better in every respect. This is especially noticeable in the timber industry, and at the present time the demand is in excess of the supply.

In view of the strain which the Dominion is experiencing, the revenue of the department has been quite satisfactory, and is much better than was anticipated. The outlook for the ensuing year is much more sanguine, and an optimistic spirit seems to prevail generally.

The work of this department has been carried on under a great handicap, owing to the number of Departmental officers who have enlisted, and also on account of the increase of work involved in handling the seed grain and relief to settlers in the districts affected by the adverse crop conditions of the preceding year. The results attained, however, are very gratifying, as the West produced a record crop last season, which was of great service to the Empire, engaged in the gigantic struggle for world freedom.

Detailed information as to the work carried on is shown by the individual reports herewith, and I am pleased to report that with the hearty co-operation of the various branches the departmental business has been conducted in an eminently satisfactory manner.

DEATHS.

Head Office—

John Curley, Immigration Branch, died 15th April, 1915.
A. E. Heney, Stationery Branch, died 20th April, 1915.
Francois Loyer, Timber and Grazing Branch, died 13th June, 1915.

J. B. F. Racette, Registration Branch, killed in action, 14th July, 1915.

Arthur Chisholm, Secretary's Branch, died 9th September, 1915.

J. L. C. Baril, Topographical Surveys Branch, killed in action in France, 9th November, 1915.

Miss M. E. McVity, Immigration Branch, died 21st November, 1915.

Miss A. G. E. Crawford, Minister's Office, died 29th November, 1915.

Abraham Knechtel, Parks Branch, died 10th December, 1915.

John Mason, Secretary's Branch, died 3rd January, 1916.

D. W. Richmond, Railway Lands Branch, died 6th March, 1916.

R. W. Clarke, Revenue Division, Accounts Branch, died 31st March, 1916.

W. F. King, Chief Astronomer, Dominion Astronomical Observatory, died 23rd April, 1916.

NOTE.—The late Thomas Richard Burpe, Deputy Land Commissioner, who was superannuated 1st May, 1911, died 30th November, 1915.

Outside Service—

Gerald Fitzgibbons, Dominion Land Office, Calgary, Alberta, killed in action, June, 1915.

G. T. Robb, Acting Inspector Forest Reserves, Prince Albert, Sask., died 4th September, 1915.

J. A. Lewis, Senior Assistant and Accountant, New Westminster, B.C., died 9th November, 1915.

G. D. Walters, Agricultural Engineer, Irrigation Office, Calgary, Alberta, died 14th January, 1916.

J. O. Dion, Caretaker, Ordnance Lands, Chambly Canton, Quebec, died February, 1916.

STATEMENT showing Gross Cash Revenue received from all sources during the fiscal year ended March 31, 1916, compared with the receipts for the previous fiscal year.

Source of Revenue.	Fiscal year 1915-16.	Fiscal year 1914-15.	Increase.	Decrease.	Net Increase.
Dominion Lands	$ 2,443,479 92	$ 3,177,386 73		$ 733,906 81	
School lands	934,965 37	943,717 00		8,751 63	
Ordnance lands	5,997 98	4,416 64	1,581 34		
Seed Grain	2,525,528 50	68,263 56	2,457,264 94		
Casual Revenue	28,002 62	11,738 10	16,264 52		
Registration Fees—Yukon	908 15	969 85		61 70	
Fines and forfeiture, N.W.T.	92 50	62 00	30 50		
Fines under Immigration Act	2,982 71	5,766 00		2,783 29	
Chinese Immigration Revenue	19,389 00	588,124 00		568,735 00	
Sales of land, Special Act	398,597 70	539,711 15		141,113 45	
	$ 6,359,944 45	$ 5,340,155 03	$ 2,475,141 30	$ 1,455,351 88	$ 1,019,789 58

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STATEMENT of Receipts on Account of Dominion Lands Revenue for the fiscal year ended March 31, 1916, as compared with the Receipts for the previous year.

Particulars.	1915–1916.	1914–1915.	Increase.	Decrease.	Net Decrease.
Homestead Fees	$ 170,350 00	$ 238,295 00		$ 67,945 00	
Pre-emption Fees	22,760 00	28,720 00		5,960 00	
Purchased Homestead Fees	2,980 00	4,150 00		1,170 00	
Improvements	112,320 18	114,982 17		2,661 99	
Pre-emption sales under Act 1908	772,833 32	387,642 22	385,191 10		
Purchased Homestead Sales	204,372 07	170,126 14	34,245 93		
General Sales	96,764 82	133,354 20		36,589 38	
Map sales, Office Fees, etc	11,485 83	14,290 23		2,804 40	
Rentals of land	8,975 60	8,249 47	726 13		
Survey Fees	6,977 35	9,607 92		2,630 57	
Timber Dues	378,960 68	310,934 29	68,026 39		
Grazing lands	118,955 02	101,710 58	17,244 44		
Grazing Lands, Improvements	462 52		462 52		
Coal Lands	175,572 51	247,466 59		71,894 08	
Hay Permits	9,775 37	9,065 62	709 75		
Mining Fees	66,082 00	77,343 12		11,261 12	
Hydraulic Leases	2,850 63	5,286 98		2,436 35	
Dredging Leases	1,480 65	5,597 49		4,116 84	
Export tax on gold	111,457 19	116,241 04		4,783 85	
Free Certificates for export of gold	82 50	107 00		24 50	
Stone Quarries	9,053 27	12,098 40		3,045 13	
Irrigation Fees	542 00	679 50		137 50	
Rent of Water Power	1,862 00	953 98	908 02		
Irrigation Sales	16,872 15	5,549 67	11,322 48		
Fees, *re* Board of Examiners, D.L.S.	470 00	970 60		500 60	
Patent and Interchange Fees	495 00	626 10		131 10	
Suspense Account	2,258 87	7,663 62		5,404 75	
Interim Receipt Account, Yukon	285 76	1,015 37		729 61	
Sand, Stone and Gravel	1,030 32	2,517 58		1,487 26	
Petroleum	94,535 37	1,116,181 89		1,021,646 52	
Rocky Mountain Park	33,224 45	35,380 21		2,155 76	
Jasper Park	1,566 61	1,221 65	344 96		
Yoho Park	442 27	656 25		213 98	
Waterton Lakes Park	1,393 80	257 46	1,136 34		
Buffalo Park	219 15	22 69	196 46		
Elk Island Park	11 50	5 00	6 50		
Forestry Branch, Trees, etc	2,085 01	1,366 23	718 78		
Miscellaneous	998 40	6,697 76		5,699 36	
Glacier Park	583 50	345 71	237 79		
Moose Mountain Buffalo Park	52 00		52 00		
Revelstoke Park	25	7 00		6 75	
	$ 2,443,479 92	$ 3,177,386 73	$ 521,529 59	$ 1,255,436 40	$ 733,906 81
Refunds	143,929 45	317,672 14		173,742 69	
	$ 2,299,550 47	$ 2,859,714 59	$ 521,529 59	$ 1,081,693 71	$ 560,164 12

In addition to $96,764.82 on account of General Sales, the Department received $398,597.70 from sales of Railway Lands which sum as provided for by Orders in Council, has been credited to Special Accounts in the books of the Finance Department.

STATEMENT showing Receipts on Account of Dominion Lands from July 1, 1872, to March 31, 1916.

Fiscal Year.	Homesteads Fees.	Pre-emption Fees.	Improvements.	Sales.		Map Sales, Office and Registration Fees, etc.	Dominion Lands Surveyors Examination Fees.	Rents, Survey Fees, Miscellaneous, including Trust Account.	Purchased, Homestead, Inspection, Cancellation and Sundry Fees.	Timber Dues
				Cash.	Scrip.					
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1872–73	6,960 00			19,170 20						109 25
1873–74	7,310 00			19,834 75				125 50		2,710 55
1874–75	11,510 00			13,666 90		129 00				2,335 25
1875–76	4,680 00			3,478 94	320 00					387 00
1876–77	2,250 00			1,085 86	136,955 16	4 00		100 00	40 00	320 00
1877–78	14,540 00			2,794 86	120,159 54		180 00		290 00	1,620 00
1878–79	17,690 00			4,998 39	210,904 84	81 00	310 00	13 70	410 00	325 00
1879–80	41,255 00	10,241 43		45,708 97	81,685 86	245 40	580 00	183 25	1,780 00	25,121 46
1880–81	20,450 00	10,801 75	269 00	71,170 17	70,828 30	985 40	420 00	37 58		32,028 34
1881–82	54,155 00	39,843 90	1,758 00	1,240,328 27	50,590 84	3,036 45	890 00	58 10		58,753 14
1882–83	73,015 00	54,725 00	7,114 91	516,092 21	33,638 40	3,109 50	890 00	501 77	45	90,066 46
1883–84	41,580 00	28,810 00	2,596 11	424,863 36	40,919 67	1,289 55	530 00	45,766 53	1,713 00	147,983 10
1884–85	25,645 00	17,100 00	2,328 75	199,275 32	45,875 60	1,621 82	370 00	50,068 57	2,685 00	87,474 99
1885–86	26,110 00	14,371 00	1,101 50	76,140 41	214,657 97	1,339 34	360 00	20,070 00	5,025 40	64,820 31
1886–87	19,614 00	6,887 93	1,971 55	48,175 76	337,640 19	1,171 39	240 00	44,561 00	7,778 53	65,111 74
1887–88	23,691 00	4,830 00	1,918 35	52,238 36	313,522 67	1,660 75	240 00	20,591 41	12,078 50	94,964 55
1888–89	39,460 00	10,550 00	4,128 48	57,513 16	318,238 57	1,410 16	220 00	10,389 57	20,402 50	90,290 00
1889–90	35,920 00	8,580 00	3,250 54	54,896 85	228,744 47	2,099 07	190 00	3,316 23	20,232 50	84,642 95
1890–91	29,164 10		6,302 61	91,664 98	171,425 14	1,854 78	88 00	7,951 05	14,712 50	102,902 71
1891–92	46,994 00		6,472 31	108,901 01	97,822 41	2,147 31	135 00	29,898 49	23,104 00	106,461 35
1892–93	37,689 74		7,113 50	93,671 67	77,231 18	975 20	82 00	18,509 35	22,014 00	105,865 24
1893–94	36,462 26		3,497 76	53,254 71	27,840 96	973 11	40 00	13,457 09	11,097 90	81,290 51
1894–95	29,664 88		3,567 90	37,293 71	23,269 62	695 99		6,271 77	6,566 50	74,079 20
1895–96	18,278 00		3,163 15	46,373 98	46,929 65	610 78	50 00	21,679 31	6,810 50	61,923 47
1896–97	21,179 00		3,737 01	49,335 53	16,929 38	795 05	70 00	19,421 98	8,527 00	68,992 82
1897–98	34,780 00		5,649 63	80,178 64	28,918 14	1,987 40	10 00	21,242 66	10,042 50	119,313 78
1898–99	58,235 00		4,297 62	116,598 35	21,307 58	1,262 05	20 00	75,085 95	13,549 00	155,360 63
1899–1900	72,690 00		4,835 81	103,247 58	88,756 22	1,258 85	190 00	38,072 54	14,937 00	126,345 82
1900–1901	79,910 00		5,213 32	40,360 93	326,270 03	3,874 14	165 00	70,970 54	12,722 00	209,399 32
1901–1902	144,425 00		8,481 46	66,950 21	169,767 13	5,792 96	370 00	71,997 30	663 00	207,790 90
1902–1903	320,409 65		11,829 08	155,507 59	158,452 66	5,911 96	365 00	125,158 56	595 00	470,916 93
1903–1904	255,772 36		15,119 47	196,750 15	188,424 22	5,549 13	463 50	81,550 46	1,081 00	397,344 33
1904–1905	304,806 25		21,571 25	154,128 04	19,644 59	4,879 13	906 50	144,924 31	1,205 00	266,951 46
1905–1906	417,834 25		31,795 19	442,588 69	7,654 57	6,042 34	474 00	141,948 55	976 25	292,684 53
1906–1907 (nine months)	215,449 55		39,763 63	494,117 12	11,349 89	5,449 06	420 00	69,536 31	1,089 51	379,476 32
1907–1908	301,693 73		71,139 47	656,303 03	92,311 24	7,727 29	690 00	148,914 00	1,283 50	473,608 94

1908–1909	389,039 00	141,550 15	70,928 86	951,442 28	20,136 27	296 55	1,040 00	75,596 96	9,946 50	269,837 52
1909–1910	415,232 00	174,250 00	105,009 07	1,239,037 33	9,973 84	9,135 49	1,577 10	100,257 89	14,028 30	378,010 70
1910–1911	445,135 00	156,485 00	143,227 13	1,193,756 04	1,437 84	8,730 01	1,310 00	42,111 92	20,142 85	387,054 96
1911–1912	391,703 12	102,070 00	184,825 92	1,967,182 85	3,256 99	11,239 14	1,400 00	44,167 03	14,745 50	400,668 61
1912–1913	337,055 00	85,940 00	168,904 42	1,650,491 87	6,157 27	14,483 91	1,040 00	17,866 65	11,380 00	463,738 75
1913–1914										
1914–1915	238,295 00	28,720 00	114,982 17	691,122 56	80 00	14,290 23	970 60	32,218 77	4,776 10	310,934 29
1915–1916	170,350 00	22,760 00	112,782 70	1,073,970 21		11,485 83	470 00	19,495 98	3,475 00	378,960 68
Total	5,595,493 89	980,176 16	1,367,699 99	15,884,885 31	3,820,268 90	168,686 59	19,116 70	1,674,237 28	310,308 29	7,517,343 19

STATEMENT showing Receipts on Account of Dominion Lands from July 1, 1872, to March 31, 1916.—*Concluded.*

Fiscal Year.	Grazing Lands.		Hay, Coal, Mining, Stone Quarries Export Tax on Gold, etc.		Canadian National Park.	Colonization Lands.		Gross Revenue.	Refunds.	Net Revenue.
	Cash.	Scrip, etc.	Cash.	Scrip.		Cash.	Scrip.			
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1872–73								26,239 45		26,239 45
1873–74								29,980 80		29,980 80
1874–75								27,641 15		27,641 15
1875–76								8,865 94		8,865 94
1876–77								140,755 02		140,755 02
1877–78								139,584 40		139,584 40
1878–79								234,732 93		234,732 93
1879–80								206,801 37	4,636 08	202,165 29
1880–81								206,990 54	5,038 22	201,952 32
1881–82	2,245 00		40 00			354,036 17		1,805,734 87	10,687 55	1,795,047 32
1882–83	22,844 43		913 91			248,492 01		1,051,403 60	8,746 05	1,042,657 55
1883–84	11,370 60		640 90			253,713 40		1,001,776 67	9,220 50	992,556 17
1884–85	17,089 75		815 63			1,214 22		451,564 65	12,070 85	439,493 80
1885–86	29,562 51	3,131 08	1,284 83					457,973 95	63,389 12	394,584 83
1886–87	14,242 77	39,487 67	1,570 40	80 00				588,532 80	19,543 16	568,989 64
1887–88	5,922 47	23,023 28	2,273 73	80 00	2,951 58		10,000 00	569,986 68	6,277 66	563,709 02
1888–89	2,207 69	16,802 63	3,946 55		2,528 73		16,000 00	594,088 04	5,226 23	588,861 81
1889–90	1,305 57	9,021 63	9,242 08		1,094 37			462,536 26	8,209 74	454,326 52
1890–91	3,079 55	16,193 77	8,628 44	160 00	2,397 35	5 28	4,460 50	460,990 76	7,195 27	453,795 49
1891–92	3,726 80	17,222 60	5,616 85		3,648 45			452,151 08	15,291 39	436,859 69
1892–93	6,380 80	11,542 39	6,266 13		4,983 23			392,324 43	18,314 97	374,009 46
1893–94	5,740 79	7,687 86	6,243 15		2,523 92			250,069 12	4,544 01	245,525 11
1894–95	5,353 72	8,628 00	5,229 54		2,321 87			202,983 10	4,365 99	198,617 11
1895–96	7,071 86	6,255 90	5,813 51		2,734 82			227,694 93	8,368 79	219,326 14
1896–97	4,715 01	2,500 00	8,518 18		2,132 11			206,853 57	15,010 54	191,843 03
1897–98	4,728 58	510 39	699,334 76		3,045 65			1,009,741 63	4,678 55	1,005,063 08
1898–99	5,245 88		1,130,371 60		2,994 16			1,584,328 32	32,296 39	1,552,031 93
1899–1900	8,382 86	4,083 30	1,038,195 42	20 00	2,727 60			1,503,743 00	23,062 28	1,480,680 72
1900–1901	4,726 28	14,671 99	1,101,808 33	20 00	4,047 31			1,874,159 09	18,368 85	1,855,790 24
1901–1902	7,292 46	8,409 27	727,878 43		*2,861 13			1,432,679 25	27,165 55	1,405,513 70
1902–1903	13,913 33	15,041 33	607,722 05		*5,063 69			1,890,886 83	21,519 84	1,869,366 99
1903–1904	19,790 27	15,202 15	495,579 18		*9,193 48			1,681,824 70	36,721 75	1,645,102 95
1904–1905	36,145 32	5,237 36	364,923 59		*14,059 55			1,339,382 35	25,786 90	1,313,595 45
1905–1906	51,583 89	80 00	296,769 19		18,883 83			1,709,315 28	33,418 36	1,675,896 92
1906–1907 (nine months)	43,711 91	400 00	213,852 59		*15,887 42			1,490,503 31	35,117 48	1,455,385 83
1907–1908*	43,211 78	4,048 01	266,415 31		27,232 87			2,094,579 17	115,080 04	1,979,499 13

1908–1909	53,312 79	3,257 84	252,972 17	.....	31,321 20	.....	.....	2,277,678 09	102,463 78	2,175,214 31
1909–1910	67,434 29	5,081 47	460,154 29	.....	43,264 36	.....	.....	3,022,446 13	121,431 15	2,901,014 98
1910–1911	60,702 80	2,356 00	774,569 27	.....	69,054 59	.....	.....	3,306,073 41	198,689 47	3,107,383 94
1911–1912	69,519 41	1,520 00	729,240 42	.....	56,497 74	.....	.....	3,978,036 73	197,641 35	3,780,405 38
1912–1913	79,412 76	.....	779,695 53	1,587 32	37,448 72	.....	.....	3,655,202 20	246,105 26	3,409,096 94
1913–1914	84,926 15	320 00	889,863 15	.....	48,800 33	.....	.....	3,313,819 65	277,309 33	3,036,510 32
1914–1915	101,710 58	400 00	1,600,455 09	.....	37,895 97	.....	.....	3,176,851 36	317,764 75	2,859,086 61
1915–1916	118,955 02	160 00	493,280 97	.....	37,493 53	.....	.....	2,443,639 92	143,942 57	2,299,697 35
Total	1,017,565 68	242,275 92	13,000,125 17	1,947 32	495,094 56	857,461 08	30,460 50	52,983,146 53	2,204,689 77	50,778,456 76

*Including scrip.

STATEMENT showing Yearly the Gross Revenue (in cash only) received from all sources from July 1, 1896, to March 31, 1916.

Fiscal Year.	Dominion Lands.	School Lands.	Seed Grain.	Ordnance Lands.	Fines and Forfeitures.	Registration Fees.	Casual Revenue.	Chinese Immigration Revenue.	Total.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1896–1897	187,424 19	24,292 43	9,887 13	9,831 27	1,316 00	8,997 24	2,683 05	.....	244,431 31
1897–1898	980,313 10	52,410 82	12,351 71	22,537 17	529 06	14,263 50	260 92	.....	1,082,666 28
1898–1899	1,563,020 74	41,249 77	12,388 69	12,349 65	2,801 03	19,220 73	2,620 91	.....	1,653,651 52
1899–1900	1,410,883 48	220,874 78	15,271 84	11,043 53	1,452 92	21,751 90	3,664 00	.....	1,684,942 45
1900–1901	1,533,197 07	48,049 83	15,711 63	14,604 47	1,977 96	33,979 77	1,587 57	.....	1,649,108 30
1901–1902	1,254,333 56	193,410 75	20,293 06	16,967 36	1,955 61	50,854 99	3,900 62	.....	1,541,715 95
1902–1903	1,716,597 20	392,206 93	28,789 97	17,612 79	5,220 88	81,404 18	2,230 26	.....	2,244,062 21
1903–1904	1,478,106 33	233,769 62	26,122 30	30,494 34	5,911 92	109,233 73	3,402 94	.....	1,887,041 18
1904–1905	1,314,485 40	332,914 48	16,471 34	10,346 90	10,018 49	123,082 86	4,258 14	.....	1,811,577 61
1905–1906	1,701,580 71	608,960 79	12,577 29	10,893 17	3,304 77	180,310 73	8,496 09	.....	2,526,123 55
	13,139,941 78	2,148,140 20	169,864 96	156,680 65	34,488 64	643,099 63	33,104 50	.....	16,325,320 36
1906–1907 (nine months)	1,478,749 51	724,353 73	10,850 06	6,663 90	21 00	46,124 20	11,785 81	.....	2,278,548 21
1907–1908	1,998,219 92	708,045 83	12,899 84	8,674 95	1,650 00	2,256 65	20,069 03	.....	2,751,816 22
1908–1909	2,254,283 98	687,422 74	53,590 86	205,749 96	281 00	1,352 13	26,224 29	.....	3,228,904 96
1909–1910	3,007,390 82	1,292,259 95	175,152 72	189,902 48	211 00	1,471 49	42,625 96	.....	4,709,014 42
1910–1911	3,302,279 57	1,614,733 93	153,351 14	6,009 34	4,052 22	1,378 19	11,336 06	.....	5,093,140 45
1911–1912	3,973,259 74	1,594,533 96	119,634 13	11,566 46	10,510 48	1,066 05	32,824 65	971,339 00	6,714,734 47
1912–1913	3,647,457 61	1,621,508 11	171,342 87	60,607 80	7,150 35	1,241 25	22,873 55	3,549,242 00	9,081,423 54
1913–1914	3,313,259 65	1,215,822 37	176,736 89	5,805 98	7,888 50	966 50	27,884 47	2,644,593 00	7,392,957 36
1914–1915	3,177,386 73	943,717 00	68,263 56	4,416 64	5,828 00	969 85	11,738 10	588,124 00	4,800,443 88
1915–1916	2,443,479 92	934,965 37	2,525,528 50	5,997 98	3,075 21	908 15	28,002 62	19,389 00	5,961,346 75
	28,595,767 45	11,337,362 99	3,467,350 57	505,395 49	40,667 76	57,734 46	235,364 54	7,772,687 00	52,012,330 26
Increases	15,455,825 67	9,189,222 79	3,297,485 61	348,714 84	6,179 12	.....	202,260 04	7,772,687 00	35,687,009 90
Decreases	.....	.....	.....	.....	.....	585,365 17	.....	.....	.....

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STATEMENT of Revenue Collected within the Canadian National Parks for the fiscal year ended March 31, 1916, as compared with the previous year.

Particulars.	Fiscal Years.		Increase.	Decrease.	Net Decrease.
	1915–1916.	1914–1915.			
Banff Park.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Rent	7,038 80	7,659 62		620 82	
Timber dues	2,526 40	1,538 76	987 64		
Water rates (sulphur)	658 80	1,072 30		413 50	
Cold water rates	6,215 35	6,994 57		779 22	
Sewer rates	2,357 29	2,687 26		329 97	
Transfer fees	166 00	98 00	68 00		
Cave and basin bathing tickets	5,642 15	4,315 90	1,326 25		
Livery licenses	758 00	934 00		176 00	
Pool, billiard and bowling licenses	250 00	370 00		120 00	
Boat licenses	85 00	122 00		37 00	
Butcher licenses	80 00	70 00	10 00		
Grazing lands	304 00	331 10		27 10	
Hot Springs bathing tickets	3,009 80	4,034 45		1,024 65	
Telephone rent	1,975 02	2,159 14		184 12	
Fines	600 50	432 85	167 65		
Peddler's licenses	105 00	94 00	11 00		
Camping permits	50 00	79 00		29 00	
Guides licenses	110 00	70 00	40 00		
Sales of town lots		837 75		837 75	
Cemetery lots	127 00	59 00	68 00		
Tea room licenses	170 00	220 00		50 00	
Hay dues	4 25		4 25		
Sand	6 25	16 25		10 00	
Impounding fees	4 00		4 00		
Dog licenses	205 85	281 00		75 15	
Automobile licenses	333 00	203 00	130 00		
Scales	24 75	21 50	3 25		
Ice	330 19	271 60	58 59		
Sale of lime	15 25	15 25			
Theatre license	24 00	37 00		13 00	
Building permits	21 00	33 00		12 00	
Miscellaneous	26 80	321 91		295 11	
	33,224 45	35,380 21	2,878 63	5,034 39	
Jasper Park.					
Timber dues	425 36	64 65	360 71		
Rent	733 00	628 00	105 00		
Building Permits	18 00	15 00	3 00		
Boat licenses and ferry fees	5 00		5 00		
Hay dues	1 25		1 25		
Store licenses		30 00		30 00	
Peddler's licenses	6 00	12 00		6 00	
Restaurant licenses		30 00		30 00	
Grazing	104 00		104 00		
Guides' licenses	30 00	10 00	20 00		
Drivers' and livery licenses	12 00	74 00		62 00	
Camping permits	25 00	2 00	23 00		
Pool, billiard and bowling licenses	70 00	110 00		40 00	
Fines		55 00		55 00	
Shooting gallery licenses		10 00		10 00	
Dog licenses	127 00	101 00	26 00		
Miscellaneous	10 00	80 00		70 00	
	1,556 61	1,221 65	647 96	303 00	

STATEMENT of Revenue collected within the Canadian National Parks, etc.,—*Con.*

Particulars.	Fiscal Years. 1915–1916,	1914–1915.	Increase.	Decrease.	Net Decrease.
Yoho Park.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Timber dues	26 00	205 00		179 00	
Hay dues	1 40		1 40		
Rentals	355 37	388 25		32 88	
Transfer fees	8 00	14 00		6 00	
Camping permits	3 00	10 00		7 00	
Cemetery lots	3 00	6 00		3 00	
Grazing	43 00	30 00	13 00		
Ice	25	50		25	
Building permits	2 00	2 00			
Miscellaneous	25	50		25	
	442 27	656 25	14 40	228 38	
Waterton Lakes Park.					
Rent	102 50	78 46	24 04		
Camping permits	42 00	72 00		30 00	
Timber dues	18 00	59 75		41 75	
Fines		20 00		20 00	
Restaurant licenses		10 00		10 00	
Guides' licenses	5 00		5 00		
Grazing rental	1,221 30		1,221 30		
Hay dues	5 00	17 25		12 25	
	1,393 80	257 46	1,250 34	114 00	
Elk Island Park.					
Timber dues	1 50		1 50		
Camping permits	5 00	5 00			
Boat licenses	5 00		5 00		
	11 50	5 00	6 50		
Buffalo Park.					
Grazing rental	4 00		4 00		
Hay dues	25 70	1 00	24 70		
Timber dues	4 75		4 75		
Miscellaneous	184 70	21 69	163 01		
	219 15	22 69	196 46		
Revelstoke Park.					
Timber dues	25	7 00		6 75	
Moose Mountain Buffalo Park.					
Hay dues	52 00		52 00		
Glacier Park.					
Rent	264 75	345 71		80 96	
Camping permits	9 00		9 00		
Gravel	290 50		290 50		
Grazing rental	18 00		18 00		
Timber dues	25		25		
Building permits	1 00		1 00		
	583 50	345 71	318 75	80 96	
Total	37,493 53	37,895 97	5,365 04	5,767 48	402 44

SESSIONAL PAPER No. 25

COMPARATIVE STATEMENT of the Homestead Entries and Sales made during the fiscal years ending the 31st March, 1915, and 31st March, 1916, respectively.

	Fiscal year ending March 31, 1915.		Fiscal year ending March 31, 1916.	
	No. of entries.	Acres.	No. of entries.	Acres.
Homesteads	24,088	3,854,080	17,030	2,724,800
Sales	724	25,702	453	13,472

STATEMENT showing the number of Homestead Entries Reported in each year since 1874.

Departmental Year Ended—	Number of Entries.
October 31, 1874	1,376
" 31, 1875	499
" 31, 1876	347
" 31, 1877	845
" 31, 1878	1,758
" 31, 1879	4,068
" 31, 1880	2,074
" 31, 1881	2,753
" 31, 1882	7,483
" 31, 1883	6,063
" 31, 1884	3,753
" 31, 1885	1,858
" 31, 1886	2,657
" 31, 1887	2,036
" 31, 1888	2,655
" 31, 1889	4,416
" 31, 1890	2,955
" 31, 1891	3,523
" 31, 1892	4,840
" 31, 1893	4,067
" 31, 1894	3,209
December 31, 1895	2,394
" 31, 1896	1,857
" 31, 1897	2,384
" 31, 1898	4,848
" 31, 1899	6,689
June 30, 1900	7,426
" 30, 1901	8,167
" 30, 1902	14,673
" 30, 1903	31,383
" 30, 1904	26,073
" 30, 1905	30,819
" 30, 1906	41,869
Nine months ended March 31, 1907	21,647
Year ended March 31, 1908	30,424
" " 31, 1909	39,081
" " 31, 1910	41,568
" " 31, 1911	44,479
" " 31, 1912	39,151
" " 31, 1913	33,699
" " 31, 1914	31,829
" " 31, 1915	24,088
" " 31, 1916	17,030

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STATEMENT showing the number of Homestead Entries made during the fiscal years ended March 31, 1915, and 1916, and the Nationality of the Homesteaders, as reported by the several Agencies of the Department in Manitoba, Saskatchewan, Alberta and British Columbia.

Nationalities.	1915. No. of entries.	1916. No. of entries.
Canadians from Ontario	2,009	1,885
" " Quebec	648	505
" " Nova Scotia	196	137
" " New Brunswick	117	82
" " Prince Edward Island	60	54
" " Manitoba	1,032	1,137
" " Saskatchewan	383	280
" " Alberta	434	310
" " British Columbia	76	63
Persons who had previous entry	3,639	3,779
Newfoundlanders	15	14
Canadians returned from the United States	48	19
Americans	4,286	2,416
English	2,974	2,374
Scotch	800	700
Irish	363	314
French	251	111
Belgians	109	103
Swiss	83	37
Italians	108	100
Roumanians	38	40
Syrians	16	5
Germans	474	170
Austro-Hungarians	2,879	1,745
Hollanders	104	50
Danes (other than Icelanders)	149	100
Icelanders	70	74
Swedes	628	342
Norwegians	645	309
Russians (other than Mennonites and Doukhobors)	1,332	719
Jews		
Russian Jews	43	6
Canadian Jews	2	
Greeks	20	3
Chinese	3	4
Japanese	7	2
Persians	2	
Australians	4	4
New Zealanders	3	2
Turks	8	4
Serbians	4	4
Bulgarians	5	4
Hindoos	5	4
South Africans	3	4
Central Americans		4
Montenegrins	2	1
Arabians		2
Brazilians	1	1
Mexicans		3
South Americans		4
Spanish	7	
W. Africans	1	
Hawaiians	1	
West Indies	1	
Maltese	1	
Total	24,088	17,030

Number of souls represented by above entries 56,218 in 1915.
Number of souls represented by above entries 38,653 in 1916.

STATEMENT showing the number of Homestead Entries made during the fiscal years ended March 31, 1915, and 1916, by persons coming from the various States and Territories of the American Union.

States.	1915 No. of entries.	1916 No. of entries.
Alabama	6	4
Alaska	1	
Arkansas	21	
California	46	18
Carolina North	15	5
Carolina, South	2	1
Colorado	24	10
Columbia, District of		
Connecticut	13	6
Dakota, North	751	583
Dakota, South	239	138
Delaware		
Florida		2
Georgia	2	3
Idaho	42	21
Illinois	221	122
Indiana	100	41
Indian Territory		
Iowa	283	145
Kansas	133	56
Kentucky	35	19
Louisiana	7	2
Maine	22	17
Maryland	7	3
Massachusetts	44	47
Michigan	247	138
Minnesota	740	394
Mississippi	2	2
Missouri	141	53
Montana	70	40
Nebraska	145	68
Nevada	1	
New Hampshire	16	8
New Jersey	11	4
New Mexico		3
New York	134	55
Ohio	99	52
Oklahoma	43	22
Oregon	74	19
Pennsylvania	87	58
Rhode Island	15	7
Tennessee	15	6
Texas	39	16
Utah	5	6
Vermont	10	12
Virginia	16	9
Virginia, West	4	4
Washington	144	67
Wisconsin	253	146
Wyoming	9	3
Total	4,334	2,435

SESSIONAL PAPER No. 25

STATEMENT showing the number of Letters Patent issued by the Department of the Interior for Dominion Lands since 1873, and the number of acres patented.

Period.	No. of patents issued.	Acreage.
1873, May to 31st December	420	67,200
1874, 1st January to 31st December	577	92,320
1875, " 31st October	464	74,240
1876, year ended 31st October	318	50,880
1877, " "	2,437	478,840
1878, " "	2,357	462,880
1879, " "	2,663	426,080
1880, " "	1,084	173,440
1881, " "	1,885	400,862
1882, " "	2,197	506,785
1883, " "	4,341	831,341
1884, " "	3,896	909,604
1885, " "	3,533	898,464
1886, " "	4,570	942,055
1887, " "	4,599	1,071,364
1888, " "	3,275	647,644
1889, " "	3,282	661,636
1890, " "	3,273	626,019
1891, " "	2,449	411,073
1892, " "	2,955	549,257
1893, " "	2,936	502,601
1894, " "	2,553	420,238
1894, November and December	413	66,102
1895, year ended 31st December	2,118	348,964
1896, " "	2,665	531,861
1897, " "	2,972	499,559
1898, " "	3,037	646,671
1899, " "	3,904	714,748
1st January, 1900 to 30th June	1,970	310,501
1901, year ended 30th June	6,461	6,846,857
1902, " "	8,768	4,711,104
1903, " "	7,349	3,266,388
1904, " "	6,890	2,982,579
1905, " "	8,798	6,197,354
1906, " "	12,370	4,181,345
1st July, 1906 to 31st March, 1907	10,596	2,361,330
1908, year ended 31st March	18,690	6,138,977
1909, " "	22,431	4,215,326
1910, " "	22,854	3,662,259
1911, " "	21,754	3,710,288
1912, " "	19,354	3,155,388
1913, " "	24,965	4,209,388
1914, " "	31,053	5,192,141
1915, " "	24,260	3,996,013
1916, " "	18,989	3,089,636
	338,725	82,239,902

STATEMENT showing number of Homestead Entries granted in the Provinces of Manitoba, Saskatchewan, Alberta, and British Columbia for fiscal year 1915-1916 as compared with fiscal year 1914-1915.

MANITOBA.

Agency.	1915–1916.	1914–1915.	Increase.	Decrease.
Brandon	86	48	38	.....
Dauphin	1,636	1,313	323	.....
Winnipeg	2,238	3,059	.....	821
Total	3,960	4,420	361	821

SASKATCHEWAN.

Battleford	739	1,244	.....	505
Estevan	23	50	.....	27
Humboldt	546	768	.....	222
Maple Creek	750	992	.....	242
Moosejaw	708	1,183	.....	475
Prince Albert	1,225	1,567	.....	342
Regina	85	131	.....	46
Saskatoon	439	815	.....	376
Swift Current	762	732	30	.....
Weyburn	309	445	.....	136
Yorkton	661	863	.....	202
Total	6,247	8,790	30	2,573

ALBERTA.

Calgary	685	989	.....	304
Edmonton	3,202	5,629	.....	2,427
Fort Murray	39	.....	39	.....
Grand Prairie	863	898	.....	35
Grouard	27	.....	27	.....
Lethbridge	201	257	.....	56
Medicine Hat	398	447	.....	49
Peace River	566	1,061	.....	495
Red Deer	429	795	.....	366
Total	6,410	10,076	66	3,732

BRITISH COLUMBIA.

Kamloops	236	446	.....	210
New Westminster	123	219	.....	96
Revelstoke	54	137	.....	83
Total	413	802	.....	389

Grand total fiscal year 1914–1915	24,088
" " 1915–1916	17,030
Net decrease for fiscal year 1915–1916	7,058

CORRESPONDENCE.

The following statement shows the number of letters received and sent by the department in each year since its establishment.

Departmental Year ended October 31.	Letters Sent.	Letters Received.	Total.
1874	3,482	4,120	7,632
1875	1,974	2,189	4,163
1876	2,256	3,097	5,353
1877	3,137	3,677	6,814
1878	4,642	6,009	10,651
1879	5,586	6,179	11,755
1880	8,222	9,910	18,162
1881	13,605	15,829	29,434
1882	25,500	30,300	55,800
1882	25,500	30300,	55,800
1883	27,180	33,500	60,680
1884	27,525	33,386	60,911
1885	33,970	43,997	77,967
1886	60,964	67,973	128,937
1887	47,845	60,890	108,735
1888	43,407	52,298	95,705
1889	48,316	50,500	98,816
1890	36,200	36,008	72,208
1891	38,000	36,267	74,267
1892	41,990	42,203	84,193
1893	50,794	48,145	98,939
1894	48,619	50,840	99,459
1896	47,501	44,238	91,739
1897	65,714	64,147	129,861
1898	88,913	87,845	176,758
1899	95,023	91,876	186,899
1900	121,219	133,177	254,396
1901	144,978	136,348	281,326
1901	167,200	185,548	352,748
1904 (From June 30, 1903, to July 1, 1904)	222,316	274,675	496,991
1905 (From June 30, 1094, to July 1, 1905)	245,470	302,723	548,193
1906 (From June 30, 1905, to July 1, 1096)	407,794	529,465	937,259
1907 (From June 30, 1905, to April 1, 1907)	372,231	620,968	993,199
1908 (From March 31, 1907, to April 1, 1908)	543,647	1,106,772	1,650,419
1909 (From March 31, 1908, to April 1, 1909)	721,217	1,114,380	1,835,597
1910 (From March 31, 1909, to April 1, 1910)	935,217	1,174,546	2,109,763
1911 (From Mrach 31, 1910, to April 1, 1914)	1,027,933	1,280,697	2,308,630
1912 (From March 31, 1911, to April 1, 1912)	1,224,316	1,304,904	2,529,220
1913 (From March 31, 1912, to April 1, 1913)	1,292,188	1,438,912	2,731,100
1914 (From March 31, 1913, to April 1, 1914)	1,189,377	1,304,075	2,493,452
1915 (From March 31, 1914, to April 1, 1915)	1,013,071	996,205	2,009,276
1916 (From March 31, 1915, to April 1, 1916)	1,957,716	1,768,505	3,726,221

The number of registered letters during the departmental year ending March 31, 1916, was: received, 29,512; sent, 23,399.

STATEMENT of Land Sales by Railway Companies having Government

Year.	Hudson's Bay Company.		Canadian Pacific Railway Company.		Manitoba Southwestern Colonization Railway Company.		Qu'Appelle, Long Lake and Saskatchewan Railroad and Steamboat Company.	
	Acres.	Amount.	Acres.	Amount.	Acres.	Amount.	Acres.	Amount.
		$		$		$		$
1893	.....	.....	93,184	295,288	14,164	57,559	1,603	.....
1894	7,526	48,225	43,155	131,628	6,312	28,003	640	.....
1895	4,431	23,209	55,453	176,950	5,623	22,330	2,391	.....
1896	9,299	52,410	66,624	220,360	21,254	88,568	286	.....
1897	10,784	53,277	135,681	431,095	63,800	234,644	2,524	.....
1898	62,000	310,000	242,135	757,792	106,473	363,982	22,534	.....
1899	56,875	274,625	261,832	814,857	58,019	199,458	61,030	178,517
1900	70,196	352,631	379,091	1,152,836	133,507	437,449	18,932	53,974
1901	82,308	399,804	339,985	1,046,665	59,749	214,953	22,266	74,810
1902	269,577	1,412,332	1,362,478	4,440,500	206,411	713,365	39,835	147,365
1903	330,046	1,939,804	2,260,722	8,472,250	250,372	699,210	843,900	1,476,900
1904	144,857	879,910	857,474	3,516,864	29,522	113,303	.....	.....
1905	139,721	865,905	411,451	2,045,800	80,342	296,936	.....	.....
1906	236,191	1,863,375	1,012,322	6,015,060	83,418	360,889	.....	.....
1907 (9 months to March 31)	69,158	742,221	851,083	4,817,632	3,051	22,645	1,353	16,789
1908	21,184	267,215	81,060	727,367	31,982	153,007	5,621	68,869
1909	25,449	288,836	29,331	383,390	10,396	84,845	37,662	380,371
1910	104,382	1,297,454	655,585	10,473,425	14,501	126,950	106,000	964,600
1911	267,038	3,747,768	715,095	10,372,661	20,313	284,859	113,533	1,237,204
1912	42,554	808,943	855,280	12,420,488	18,932	117,497	35,213	495,116
1913	53,581	1,128,806	447,158	6,348,352	2,768	48,639	15,395	255,399
1914	26,292	572,837	263,962	4,242,089	7,626	91,948	1,629	21,546
1915	16,400	306,550	151,262	2,496,872	489	5,508	1,292	19,118
1916	79,310	1,273,144	242,215	3,670,421	4,780	58,808	12,246	180,361
Totals	2,129,159	18,909,281	11,813,618	85,470,642	1,233,804	5,825,355	1,345,885	5,570,939

Land Grants, and by the Hudson's Bay Company.

Calgary and Edmonton Railway Company.		Canadian Northern Railway Company.		Great Northwest Central Railway Company.		Totals.		Average per Acre.
Acres.	Amount.	Acres.	Amount.	Acres.	Amount.	Acres.	Amount.	
	$		$		$		$	$ cts.
11,260						120,211	352,847	2 93
11,035						68,668	207,856	3 02
46,815						114,713	222,489	1 94
10,553						108,016	361,338	3 34
9,436						222,225	719,016	3 23
15,481						448,623	1,431,774	3 18
24,738	53,335					462,494	1,520,792	3 28
46,653	128,256					648,379	2,125,146	3 27
116,719	352,037					621,027	2,088,269	3 36
323,494	1,033,396					2,201,795	7,746,958	3 56
231,800	909,600	183,736	631,503	128,435	522,490	4,229,011	14,651,757	3 46
129,007	563,507	64,469	313,575	41,858	177,081	1,267,187	5,564,240	4 39
109,191	512,898	231,707	1,221,469	17,593	103,564	990,005	5,046,572	5 09
85,784	480,063	204,966	1,014,351	20,003	137,503	1,642,684	9,871,241	6 01
59,515	346,064	289,576	1,711,109	4,023	41,470	1,277,759	7,697,930	6 02
8,606	75,644	196,946	1,746,504	1,294	13,855	346,693	3,052,461	8 80
6,370	66,508			165	7,935	109,373	1,211,885	11 08
18,323	182,926	285,428	2,783,010	571	6,863	1,184,790	15,835,228	13 36
11,820	116,231	277,414	3,336,797	1,438	27,417	1,406,651	19,122,937	13 59
10,853	154,424	365,926	4,216,578	632	11,373	1,329,390	18,224,419	13 70
4,155	44,212	182,491	2,009,642	1,601	32,105	707,149	9,867,155	13 95
19,575	460,129	182,491	2,009,642			501,575	7,398,191	14 75
23,042	444,018			316	6,965	172,801	3,279,031	17 01
11,689	172,033			4,646	81,182	354,886	5,435,949	15 32
1,345,914	6,095,281	2,465,150	20,193,180	222,575	1,169,803	20,556,105	143,035,481	6 96

THE LAND SITUATION, Manitoba, Saskatchewan, and Alberta, corrected to January 1, 1916.

PROVINCE.	SURVEYED AREA.			UNSURVEYED AREA.		
	Land.	Water.	Total.	Land.	Water.	Total.
Manitoba	31,432,384	4,041,217	35,473,601	112,138,314	13,560,383	125,698,697
Saskatchewan	76,725,841	1,835,456	78,561,297	75,614,479	6,912,224	82,526,703
Alberta	82,685,994	2,216,135	84,902,129	76,192,666	2,287,605	78,480,271
Totals	190,844,219	8,092,808	198,937,027	263,945,459	22,760,212	286,705,671

PROVINCE.	TOTAL AREA.		
	Land.	Water.	Total.
Manitoba	143,570,698	17,601,600	161,172,298
Saskatchewan	152,340,320	8,747,680	161,088,000
Alberta	158,878,660	4,503,740	163,382,400
Totals	454,789,678	30,853,020	485,642,698

A large proportion of the unsurveyed area has not yet been explored except in a very partial way, and the area suitable for agriculture cannot be estimated with any degree of accuracy.

Disposition of the Surveyed Area—The two following statements, "Area available for Cultivation" and "Area not available for Cultivation" taken together show the disposition of the surveyed area.

AREA AVAILABLE FOR CULTIVATION (SURVEYED AREA).

——	Manitoba.	Saskatchewan.	Alberta.	Total.
Area under Homesteads (including Military Homesteads)	8,184,000	26,910,000	17,816,000	52,910,000
Area under Pre-emption and Purchased Homesteads	.....	5,878,400	2,913,760	8,792,160
Area under Northwest Half-breeds scrip, sales and special grants	4,233,000	2,261,000	1,199,000	7,693,000
Area granted to railway companies	3,566,997	15,177,063	13,120,014	31,864,074
Area granted to Hudson's Bay Company	1,447,400	3,205,800	2,218,300	6,871,500
Area of School land endowment	1,555,800	3,941,800	3,359,300	8,856,900
Area sold under irrigation system	.....	76,921	980,357	1,057,278
Area of Manitoba swamp lands disposed of by the Province	848,154	.....	.....	848,154
Area of Parish and river lots	488,648	82,452	118,485	689,585
Area of Indian reserves	436,684	1,181,747	1,368,156	2,986,587
Area of Indian reserves surrendered	83,740	332,121	302,046	717,907
Area now available for entry	5,076,000	4,900,000	15,500,000	25,476,000
Totals	25,920,423	63,947,304	58,895,418	148,763,145

AREA NOT AVAILABLE FOR CULTIVATION (SURVEYED AREA).

——	Manitoba.	Saskatchewan.	Alberta.	Total.
Area under timber license	1,176,500	1,434,800	1,404,000	4,015,300
Area under grazing leases	32,400	2,292,500	2,724,500	5,049,400
Area under Forest reserves and Parks	2,606,400	6,195,700	16,813,400	25,615,500
Area reserved for Forestry purposes	734,800	1,400,000	1,606,900	3,741,700
Area of road allowances	961,861	1,455,537	1,241,776	3,659,174
Area of water covered lands	4,041,217	1,835,456	2,216,135	8,092,808
Totals	9,553,178	14,613,993	26,006,711	50,173,882

AREA OF FIELD CROPS, 1915.

——	Manitoba. Acres.	Saskatchewan. Acres.	Alberta. Acres.
Area under wheat	3,342,900	6,838,100	1,563,700
Area under oats	1,441,000	2,937,000	1,912,000
Area under barley	490,000	287,000	185,000
Area under flax	34,000	697,000	70,000
Area under other products	284,650	118,550	236,230
Totals	5,592,550	10,877,650	3,966,930

"Other Products" include the following:—Rye, peas, mixed grains, potatoes, turnips, etc., hay and clover, fodder corn, and alfalfa.

STATEMENT showing Area under Field Crops in Manitoba, Saskatchewan, and Alberta, 1908-15, in acres.

Provinces.	1908	1909	1910	1911	1912	1913	1914	1915
Manitoba	5,116,000	5,061,503	4,594,784	5,134,087	4,971,400	4,965,500	4,671,790	5,592,550
Saskatchewan	3,552,643	5,814,923	6,817,841	8,644,102	10,315,800	10,307,600	9,238,000	10,877,650
Alberta	1,996,300	1,483,400	1,999,963	3,351,745	3,603,060	3,690,100	3,369,270	3,966,930
Totals	11,664,943	12,359,826	13,412,588	17,129,934	18,890,260	18,963,200	17,279,060	20,437,130

GRAIN Production of Manitoba, Saskatchewan, and Alberta, 1908-15, in bushels.

Provinces.	1908	1909	1910	1911	1912	1913	1914	1915
Manitoba	112,487,000	129,255,000	71,230,477	138,994,000	137,432,004	125,171,000	80,852,000	184,238,000
Saskatchewan	67,084,000	183,311,000	132,879,172	233,137,500	257,266,000	261,823,000	146,425,500	372,571,100
Alberta	33,873,000	54,215,000	27,868,011	101,592,000	110,288,000	113,882,500	91,795,900	167,742,600
Totals	213,444,000	366,781,000	231,977,660	473,723,500	504,986,004	500,876,500	319,073,400	724,551,700

WHEAT Production of Manitoba, Saskatchewan, and Alberta, 1908-15, in bushels.

Provinces.	1908	1909	1910	1911	1912	1913	1914	1915
Manitoba	50,269,030	52,706,000	34,125,949	62,689,000	63,017,000	53,331,000	38,605,000	96,425,000
Saskatchewan	34,742,000	85,197,000	66,979,996	109,075,000	106,960,000	121,559,000	73,494,000	195,168,000
Alberta	6,842,000	9,579,000	9,060,210	36,602,000	34,303,000	34,372,000	28,859,000	51,355,000
Totals	91,853,030	147,482,000	110,165,155	208,366,000	204,280,000	209,262,000	140,958,000	342,948,000

GRAIN Production of Manitoba, Saskatchewan, and Alberta, 1915, in bushels.

Provinces.	Wheat.	Oats.	Barley.	Rye.	Mixed Grain	Flax.
Manitoba	96,425,000	69,471,000	17,763,000	155,000	50,000	374,000
Saskatchewan	195,168,000	157,628,600	10,570,200	75,600	58,500	9,061,000
Alberta	51,355,000	107,741,000	6,984,000	463,000	67,000	1,124,000
Totals	342,948,000	334,840,600	35,317,200	693,600	175,500	10,559,000

GENERAL DEVELOPMENT.

The development of Western Canada on lines other than the production of grain, is indicated by the following statements:—

CAPACITIES of Licensed Elevators, in bushels.

Fiscal Year.	Manitoba.	Saskatchewan.		Alberta.	Totals.
1900–01	10,323,272	.....	N.W.T. 2,436,080	.....	12,759,352
1901–02	12,255,000	.....	" 3,194,000	.....	15,449,000
1902–03	16,121,400	.....	" 5,105,000	.....	21,226,400
1903–04	19,297,000	.....	" 7,917,000	.....	27,214,000
1904–05	19,557,630	.....	" 8,934,000	.....	28,491,630
1905–06	20,656,100	8,951,600	.....	1,715,500	31,323,200
1906–07	20,502,200	12,989,500	.....	2,785,500	36,277,200
1907–08	21,015,600	14,666,500	.....	3,818,900	39,501,000
1908–09	20,558,500	17,924,500	.....	4,386,400	42,869,400
1909–10	21,624,500	24,314,500	.....	8,080,400	54,019,400
1910–11	21,813,800	26,465,000	.....	8,764,500	57,043,300
1911–12	22,410,500	29,314,000	.....	9,863,000	61,587,500
1912–13	22,253,150	36,503,000	.....	11,565,500	70,321,650
1913–14	21,690,000	42,995,000	.....	14,793,000	79,478,000
1914–15	22,045,500	48,074,500	.....	16,089,000	86,209,000
1915–16	22,113,000	52,943,000	.....	18,807,000	93,863,000

The above figures do not include capacities of hospital and terminal elevators.

STATEMENT of Number of Farm Live Stock in Manitoba, Saskatchewan, and Alberta, 1910-15.

	1910	1911	1912	1913	1914	1915
Manitoba—						
Horses	244,987	280,374	293,776	304,088	316,707	317,847
Cattle	479,741	435,113	415,601	409,718	408,302	404,097
Sheep	30,266	37,322	40,800	42,840	45,303	50,880
Swine	142,312	188,416	183,370	184,745	186,276	163,308
Totals	897,306	941,225	933,547	941,391	956,588	936,132
Saskatchewan—						
Horses	332,922	507,400	551,645	580,386	609,521	630,062
Cattle	569,619	633,612	646,140	663,098	679,060	755,293
Sheep	135,360	114,216	114,810	115,568	126,027	133,311
Swine	125,788	286,295	344,298	386,784	454,703	411,324
Totals	1,163,689	1,541,523	1,656,893	1,745,836	1,869,311	1,929,990
Alberta—						
Horses	294,225	407,153	451,573	484,809	519,424	544,772
Cattle	1,051,407	739,850	745,229	779,293	812,100	843,974
Sheep	179,067	133,592	135,075	178,015	211,001	238,579
Swine	143,560	237,510	278,747	350,692	397,123	229,696
Totals	1,668,259	1,518,105	1,610,624	1,792,809	1,969,648	1,857,021

VALUE of Mineral Production (Calendar Years).

Province.	1910	1911	1912	1913	1914	1915
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Manitoba	1,500,359	1,791,772	2,463,074	2,214,496	2,413,489	1,351,604
Saskatchewan	498,122	636,706	1,165,642	881,142	712,313	395,728
Alberta	8,996,210	6,662,673	12,073,589	15,054,046	12,684,234	9,915,282
Totals	10,994,691	9,091,151	15,702,305	18,149,684	15,810,036	11,662,614

RAILWAY MILEAGE.

Year.	Manitoba.	Saskatchewan.	Alberta.	Totals.
1901	2,056	1,107	978	4,141
1902	2,128	1,102	978	4,208
1903	2,224	1,117	978	4,319
1904	2,364	1,180	1,020	4,319
1905	2,672	1,523	1,020	5,215
1906	2,823	1,973	1,200	5,996
1907	3,074	2,025	1,323	6,422
1908	3,111	2,081	1,323	6,515
1909	3,205	2,631	1,321	7,157
1910	3,221	2,932	1,488	7,641
1911	3,466	3,121	1,494	8,081
1912	3,520	3,754	1,897	9,171
1913	3,993	4,651	2,212	10,856
1914	4,076	5,089	2,545	11,710
1915	4,498	5,327	3,174	12,999

BRANCHES of Canadian Chartered Banks.

Year.	Manitoba.	Saskatchewan.	——	Alberta.	Totals.
1901	52	....	N.W.T. 19	....	71
1902	53	....	" 23	....	76
1903	64	....	" 42	....	106
1904	86	....	" 74	....	160
1905	90	39	....	41	170
1906	104	48	....	49	201
1907	146	91	....	77	314
1908	161	116	....	89	366
1909	164	131	....	97	392
1910	171	187	....	140	498
1911	192	320	....	220	732
1912	195	378	....	253	826
1913	206	399	....	263	868
1914	205	404	....	261	870
1915	201	401	....	246	848

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STATEMENT showing number of Immigrants whose destination was Manitoba, Saskatchewan and Alberta, 1900-01 to 1914-15.

Fiscal Year.	Manitoba.	Saskatchewan.	Alberta.	Totals.
1900-01	11,254	14,160		25,414
1901-02	17,422	22,199		39,621
1902-03	39,535	43,898		83,433
1903-04	34,911	40,397		75,308
1904-05	35,387	39,289		74,676
1905-06	35,648	28,728	26,177	90,553
1906-07	20,273	15,307	17,559	53,139
1907-08	39,789	30,590	31,477	101,856
1908-09	19,702	22,146	27,651	69,499
1909-10	21,049	29,218	42,509	92,776
1910-11	34,653	40,763	44,782	120,198
1911-12	43,477	46,158	45,957	135,592
1912-13	43,813	45,147	48,073	137,033
1913-14	41,640	40,999	43,741	126,380
1914-15	13,196	16,173	18,263	47,632
1915-16	3,487	6,001	7,215	16,703
Totals	455,236	834,577		1,289,813

[1] For nine months ending March 31, 1907.

THE UNEXPLOITED NORTH.

In the consideration of the agricultural and other possiblities of the northern portions of the three Prairie Provinces, and the vast region beyond, it may be said that the conditions existing in Alberta and Saskatchewan are approximately similar, while northern Manitoba and the district of Keewatin—together with the country known as the Mackenzie River basin—possess many features common to each other.

The northern portions of Alberta and Saskatchewan have a similarity of soil and climate, while the contour of the country and the extent and variety of the wood lands also present points of resemblance.

In northern Manitoba, Keewatin, and the Mackenzie basin, there exist vast water area, and swamp lands, while in each the timber is small and sparse, except in a few localities.

Northern Alberta embraces the valleys of the Peace and Athabaska rivers, now being rapidly opened up for settlement by railway construction.

So long ago as 1876, wheat from the Peace River district won a prize at the Centennial Exposition in Philadelphia. Edmonton, which may be regarded as the gateway of northern Alberta, is now connected by rail with Peace River Crossing and Grande-Prairie, the two important centres of this district, which is now beginning to attract a large number of settlers. Another railway, running in a northeasterly direction has tapped the Athabaska valley for a distance of over one hundred miles.

It has been well established that in almost any portion of northern Alberta and Saskatchewan, all the hardier grains, including wheat, oats, and barley, will mature and produce large yields. Root crops, of all kinds, and berries, are successfully grown. As is well known, the summers, while comparatively short, are favoured by a great amount of sunlight, under which vegetation is rapid. The general conditions obtaining in northern Alberta exist in an only slighter degree in the same portion of Saskatchewan.

As respects northern Manitoba, Keewatin, etc., the arable lands are located largely in isolated blocks.

In the Mackenzie River basin, there are about 200 square miles of territory which will support an agricultural population. As respects the future of these outlying districts, it can only be said that this depends upon the development of the transportation facilities.

Northern Alberta, with its railways being pushed vigorously to the north, west, and east, is rapidly being opened up to settlement, and it is to be expected that the northern portions of Manitoba and Saskatchewan will develop to the same extent upon the introduction of railway facilities.

As respects minerals, traces of gold and nickel can be seen throughout northern Alberta and Saskatchewan. Bituminous sands, petroleum, and oil are also found, but not as yet in paying quantities. Coal of a coarse variety, sufficient for domestic use, exists.

In Keewatin and the Mackenzie River basin, oil and many minerals are found, but the high price of labour and lack of transportation facilities prevent their successful exploitation.

It may be said, generally, of the entire northern country, that fish and game abound. Food fish, while not so plentiful in the rivers, are found in large quantities in the innumerable lakes, while moose, caribou, and all the fur-bearing animals roam through the woods.

IMMIGRATION.

The report of the Superintendent of Immigration will be found in Part II. of the general report, and it includes his report as Chief Controller of Chinese Immigration.

The following is a comparative statement of immigrant arrivals, from 1897 onward: —

	British.	From U. S. A.	Other Countries.	Totals.
Calendar year, 1897	11,383	2,412	7,921	21,716
" " 1898	11,173	9,119	11,608	31,900
" " 1899	10,660	11,945	21,938	44,543
Six months ended June 30, 1900	5,141	8,543	10,211	23,895
Fiscal year ended June 30, 1901	11,810	17,987	19,352	49,149
" " 1902	17,259	26,388	23,732	67,379
" " 1903	41,792	49,473	37,099	128,364
" " 1904	50,374	45,171	34,786	130,331
" " 1905	65,359	43,543	37,364	146,266
" " 1906	86,796	57,796	44,472	189,064
Nine months ended March 31, 1907	55,791	34,659	34,217	124,667
Fiscal year ended March 31, 1908	120,182	58,312	83,975	262,469
" " " 1909	52,901	59,832	34,175	146,908
" " 1910	59,790	103,798	45,206	208,794
" " 1911	123,013	121,451	66,620	311,084
" " 1912	138,121	133,710	82,406	354,237
" " 1913	150,542	139,009	112,881	402,432
" " 1914	142,622	107,530	134,726	384,878
" " 1915	43,276	59,779	41,734	144,789
" " 1916	8,664	36,937	2,936	48,537

BRITISH IMMIGRATION.

The great decrease in British immigration from 43,276, in 1914-15, to 8,654 in 1915-16, nearly 80 per cent, may be accounted for by reason of there having been no war in Europe during the first four months of 1914-15, so that during April, May, June and July, 1914, immigration from the British Isles was nearly normal.

CONTINENTAL IMMIGRATION.

A decrease from 41,734 to 2,936 in arrivals from continental countries during the last fiscal year, as compared with that of the preceding year, nearly 93 per cent, may be accounted for in the same way. During the four months, April to July, 1914, immediately preceding the outbreak of war, the total arrivals from continental countries numbered 38,389. The war, of course, has a greater effect on emigration in countries in which military conscription is enforced.

AMERICAN IMMIGRATION.

The decrease in immigration from the United States is not nearly so great; during 1914-15, the number was 59,779, while for 1915-16 the total was 36,937, a decrease of slightly over 38 per cent, as compared with a decrease of about 80 per cent in British immigration.

IMMIGRATION INSPECTION.

There has been no relaxation in the enforcement of regulations pertaining to the admission and rejection of passengers along the international boundary, which, for convenience, is divided into five inspectorates.

JUVENILE IMMIGRATION.

The immigration of children, unaccompanied by parents or guardians, occupies a distinct and important place in the work of the department, and comes under the immediate supervision of the Chief Inspector of British Immigrant Children and Receiving Homes, whose report of this phase of departmental work will furnish interesting reading.

DESCRIPTION OF THE WORK OF THE TOPOGRAPHICAL SURVEYS BRANCH.

Surveys of Dominion Lands were continued during the year on much the same scale as formerly, in Manitoba, Saskatchewan, Alberta, the Yukon Territory, the Northwest Territories, and in the Railway Belt of British Columbia.

Sixty-five parties were employed, all under daily pay, four of whom worked on inspection of surveys, six on block outline surveys, one on levelling, twelve on stadia surveys of lakes and rivers, one on astronomical observations, one on photo-topographic surveys, nine on corrections and resurveys, and thirty-one on sub-division surveys.

Of the parties, seven worked in British Columbia, twenty-eight in Alberta, twelve in Saskatchewan, nine in Manitoba, and nine partly in one province and partly in another.

Surveys being now well advanced beyond settlement, it was found possible to reduce the number of parties on the original survey of base lines and initial meridians to six, in place of eight the previous season; one party was continued on the retracement of old lines. The seven parties surveyed 962 miles of original line and retraced 739 miles of old lines. The new lines established were mostly in the Peace River valley and in Manitoba.

Thirty-one parties were employed in township subdivision, which is now well in advance of settlement. Of the thirty-one parties, seven were on miscellaneous subdivision in the Railway Belt, British Columbia, and five on miscellaneous subdivision in Manitoba, Saskatchewan, and Alberta.

Four parties were continued on the inspection of the surveyors' work and their organization and equipment.

The topographical survey of Jasper park in the vicinity of Jasper, Alta., was completed, and a map from the surveys is now in preparation.

The commission for the delimitation of the boundary between Alberta and British Columbia continued their work and extended the boundary across Akamina, Elk, Dome, and North Fork passes, and over sections of the intervening country.

The investigation of the changes in lakes and rivers in Manitoba, Saskatchewan, and Alberta was continued, twelve parties being continued on the work. Corrected plans for the townships in which such investigations were made are being prepared.

In Alberta and Saskatchewan, six parties continued resurveys in townships where the original survey monuments were lost and where the owners of lands affected complied with the requirements of the Dominion Lands Surveys Act. In addition, two surveyors were employed to travel from place to place, accompanied by an assistant, to correct, when possible, discrepancies in the original surveys when the amount of work involved was small.

On party was engaged in obtaining latitude observations to detect discrepancies, if any, in the governing lines of the system of survey. The work during 1915 was confined mostly to Manitoba and Saskatchewan.

At Banff, the St. Julien subdivision was continued and a number of additional roads and trails were surveyed.

Two timber berths and twenty-nine mineral claims were surveyed during the season.

Surveys in Yukon Territory were continued under the Director of Surveys at Dawson, whose report will be found accompanying the report of the Topographical Surveys Branch in monograph form.

The usual table is below showing the subdivision or settlement survey work completed each year since the inception of the surveys, with the result of last season's operations added. Though the number of miles surveyed in 1915 is fully equal to that of 1914, the acreage is less because all the section lines in townships are now surveyed and marked on the ground, while formerly only one-half of the east and west section lines were run. The change was very much needed, and will be appreciated by the settlers who will not now have the difficulty they had before in finding the boundaries of their lands.

Period.	Acres.	Number of farms of 160 acres each.
Previous to June, 1873	4,792,292	29,952
1874	4,237,864	26,487
1875	665,000	4,156
1876	420,507	2,628
1877	231,691	1,448
1878	306,936	1,918
1879	1,130,482	7,066
1880	4,472,000	27,950
1881	8,147,000	50,919
1882	10,186,000	63,662
1883	27,234,000	170,212
1884	6,435,000	40,218
1885	391,680	2,448
1886	1,379,010	8,620
1887	643,710	4,023
1888	1,131,840	7,074
1889	516,968	3,231
1890	817,075	5,106
1891	76,560	476
1892	1,395,200	8,720
1893	2,928,640	18,304
1894	300,240	1,876
1895	406,240	2,539
1896	506,560	3,166
1897	428,640	2,679
1898	859,840	5,374
1899	1,022,720	6,392
1900 (first 6 months)	735,480	4,596
1900–1901	1,603,680	10,023
1901–1902	2,553,120	15,957
1902–1903	6,173,440	38,584
1903–1904	12,709,600	79,435
1904–1905	10,671,520	66,697
1905–1906	4,973,920	31,087
1906–1907 (9 months)	3,819,700	23,873
1907–1908	6,123,040	38,269
1908–1909	7,412,870	46,330
1909–1910	7,423,200	46,395
1910–1911	5,683,200	35,520
1911–1912	5,146,080	32,163
1912–1913	5,155,520	32,222
1913–1914	5,193,280	32,458
1914–1915	4,484,960	28,031
1915–1916	3,112,640	19,454
	174,038,945	1,087,738

THE DOMINION ASTRONOMICAL OBSERVATORY AND THE BOUNDARY AND GEODETIC SURVEYS.

Progress on the 72-inch reflecting telescope has been very satisfactory during the past year, and it is now approaching the final stages of erection and adjustment.

The mounting has been completed and temporarily erected at the factory of the Warner & Swasey Company, and all the operating mechanism tested. The whole massive machine, the moving parts of which weigh upwards of 40 tons, works with the greatest smoothness and ease, and can be set, driven, and guided by means of the seven electric motors and the conveniently situated stationary and portable switchboards with the utmost facility; indeed this enormous mechanism can be operated and handled with greater ease than many small telescopes. The mounting will be taken down and shipped to its observatory near Victoria, B.C., as soon as the erection of the dome is sufficiently advanced.

The 72-inch mirror, the principal optical part of the telescope, is in the spherical form, and is waiting now the completion of the large testing plane required for parabolizing the surface. The smaller optical parts are all completed and attached to the mounting. It is hoped that the mirror will be ready as soon as the mounting is erected, which will be towards the end of the summer.

The massive pier which supports the telescope was completed last fall, and the surrounding circular steel building, 66 feet in diameter, during the winter. The dome—also constructed by the Warner & Swasey Company—which rests and revolves on this building, arrived in Victoria about March 20, and is now being erected. This dome will be the most complete and convenient, as well as the most carefully designed to work in proper conjunction with the telescope, of any in the world.

One of the observer's residences has been erected, but the office building and the other residences required have not yet been begun. It is hoped that everything will be ready to begin regular observations next spring after the considerable preliminary experimental and adjusting work has been completed.

At Ottawa during the past year, 694 stellar spectrograms were obtained, as against 906 in the previous year. This reduced number is partly due to greater cloudiness and partly to the increased exposure time with the fainter stars now being observed. It is fortunate that the new reflecting telescope will be ready soon, as the available programme for the 15-inch is becoming seriously limited.

The orbits of eight spectroscopic binary stars have been completed and published, two or three of which were of quite unusual interest and importance. This makes the total number of binary orbits determined by the Dominion Observatory thirty-seven, a considerably greater number than was obtained by any other observatory.

The new photographic telescope has been employed partly in making some general photographs of stellar regions, but more particularly in photographic photometry. Photometric observations of a number of the spectroscopic binaries, whose orbits were determined here, have been made with results indicating light variation in two or three cases, but more observations are required to complete the work.

Solar observations have also been vigorously prosecuted during the year. The reduction of the measures of the rotation plates made in 1911, 1912, 1913, has been completed, and a preliminary report published. The large quantity of measures, reductions, and discussion is now being prepared for publication. A special investigation on the possibility of a varation in the rate of rotation of the sun was carried through during the past summer, the results showing a strong probability that the rate varies cyclically over comparatively short intervals and that, in addition, there is a secular change.

Direct photographs of the sun, thirty-five in number, were taken on suitable days when spots were present, and with the 23-foot solar spectrograph, 330 plates were obtained. These include series taken at several different wave-lengths of limb and centre spectra simultaneously, and in some cases with a comparison spectrum of iodine added. A number of sun-spot plates extending the larger series of the preceding year were also made.

During the past year the instruments for the study of the deformation of the earth under the influence of the moon and sun, an international undertaking, have been set up in the specially constructed vault, and continuous photographic records have been obtained.

The seismographic instruments have been in constant operation, and eighty-one earthquakes were recorded during the calendar year. Seismological tables were issued and distributed amongst practically all the seismological stations of the world. As these are the first complete tables issued, they will tend towards uniformity in interpretation of seismograms. The monthly bulletins of recorded earthquakes have been continued as heretofore. The undagraph at Chebucto, near Halifax, has been in operation during the year and recorded the waves of the Atlantic reaching Chebucto, for, for correlation with the microseismic record at the observatory.

The magnetic survey of Canada has progressed satisfactorily. During the season, forty-eight new stations were occupied, at each of which the three magnetic elements, declination, inclination, and intensity were observed. The most of the stations were in British Columbia, including a series along the Grand Trunk Pacific from Prince Rupert eastward. There is a growing public demand for the results of this survey, especially in regard to the declination, or variation of the compass, as popularly called.

The gravity survey completed a good season's work by occupying twenty-four stations across the continent, besides Ottawa the base station, which in turn is linked up by inter-comparison with Washington, thereby making the Canadian observation of international standard. The observations have all been made with the Mendenhall half-seconds pendulum, whereby an accuracy within the one ten-millionth of a second of time for the period of the pendulum is attained.

Observations with the meridian circle were obtained on 121 nights; there were about 2,700 observations for right ascension and 1,600 for declination; the work with this instrument was devoted mainly to the list of latitude stars which has been under observation for several years.

The time service has been maintained as in previous years; this includes, on the one hand, the operation of the electrical clocks in the government buildings, the maintenance of relays beating seconds in several offices in the city, and the sending out of time signals by telegraph and telephone; on the other, the various incidental requirements of the observatory, such as operation of chronographs, recording of time on the seismographs, rating of watches and chronometers, etc. The dropping of the time-ball has been discontinued for the present, since the fire in the Parliament building.

The astronomical field work consisted of the determination of latitude and longitude at thirteen points. Of these one was a Laplacian point, to be used in the

adjustment of a portion of the geodetic net; at this station, which was in eastern Quebec, the azimuth of one of the lines of the triangulation was also measured. The establishment of such Laplacian points, involving determination at the same point of longitude, latitude and azimuth will be required at various stations as a means of eliminating certain cumulative errors in the geodetic triangulation.

Of the remaining stations, the longitudes of three in northern Ontario, along the National Transcontinental railway, were determined by electric telegraph from Ottawa. The remaining nine, seven in Quebec and two in Ontario, near Georgian bay, were determined by wireless telegraphy in the manner described in last year's report. The latitudes of all these stations were also determined.

The first draft of the report on the survey of the 141st meridian, between Yukon territory and Alaska, has been approved by the commissioners, and thirty-two of the thirty-eight map sheets have been printed, and the proofs of the remaining six have been examined.

The maps of the boundary between British Columbia and southeastern Alaska are being made ready for the printers.

On the Ontario-Minnesota boundary, the survey is completed from the northwest angle, lake of the Woods, to the outlet of Namakan river from lake Lacroix. It will require a short season's work to make connection at Curtain falls with the survey from lake Superior. This will complete the Canadian sections of this boundary.

The Quebec-Maine boundary along the Highlands was completed from the head of the southwest branch of the St. John river to where the line passes between Portage lake in Quebec and Penobscot lake in Maine.

A triangulation was also carried from lake Pohengamook at the head of the St. Francis river, to a point on the St. John river, about ten miles from the north-and-south line, between New Brunswick and Maine, a distance of 96 miles.

The triangulation west from lake Superior is completed to Sagahinaga lake, and the reconnaissance extended to the middle of Basswood lake, where a base has been measured by United States surveyors. It is the intention to establish a Laplace station by wireless telegraph in the neighbourhood of this base.

On the Geodetic Survey of Canada a reconnaissance was made from the vicinity of Hecate strait to Queen Charlotte sound, including the Queen Charlotte islands and the islands adjacent to the mainland. Angle measures were made at five primary stations with a 12-inch theodolite. Oldfield station, in the vicinity of Prince Rupert, was prepared as a Laplace station.

Three field parties were also employed in eastern Canada on the geodetic survey; one observing horizontal directions, one measuring base lines, and one making a reconnaissance survey.

Two stations in the province of Quebec and eleven stations in southwestern Ontario were occupied by the observing party. Twenty-nine geographical positions, marked by church spires, factory chimneys, and water towers, were also established.

The base line party measured two base lines in southwestern Ontario, one near Collingwood and the other near London. The reconnaissance for the connection between the base lines and the primary triangulation was also made by this party

The third party made a reconnaissance survey for the purpose of connecting the geodetic survey of southeastern Quebec with that of southwestern New Brunswick.

Precise levelling was carried on during the season of 1915 by six parties, one of which operated in New Brunswick and Quebec, two in Ontario, one in Alberta, one in British Columbia, and one in Alberta and British Columbia. Over 1,800 miles of levelling was accomplished during the season, and the net of precise levels considerably strengthened by the closure of several additional circuits.

A transcontinental line of levels—extending from Halifax to Vancouver—has now been almost completed; only two unlevelled sections, of less than 300 miles each, now remaining to complete such a line. It is proposed during the coming season to make a vigorous effort to accomplish this connection.

Requests for the elevations resulting from precise levelling have been received in considerable number from engineering and surveying organizations; the number of such inquiries is constantly becoming greater as the work becomes more widely known to the public.

FORESTRY.

The season of 1915-16 was generally wet throughout the western provinces except in the northern districts and in the coast district of British Columbia. In the greater part of the country where the forests are under the protection of the department there was therefore little danger of fire during the season, with the exception of a short period in the spring. In spite of the almost continuous danger in the coast district and numerous fires, the situation was kept well in control, illustrating the results that can be obtained by planning and organization backed by an efficient staff. In the northern districts the rangers necessarily have such large patrols, and the population is so scattered, that their work is mainly educative. The number of fires which occurred show that there is still carelessness among people travelling in the forest, and that a great deal of education is required before there is a possibility of reasonable safety. The statement of causes of fire throughout the year show that "campers and travellers" and settlers are responsible for the largest number of fires. The railways have dropped into third place largely on account of the efficient enforcement of the regulations of the Board of Railway Commissioners.

On the forest reserves the protection system is approaching the point, as a result of the improvement work carried out, where the fire situation should be possible of control, with proper planning of the work of fire-fighting and efficient work by the rangers. With protection against fire on the forest reserves fairly provided for it has been possible to take up the work of reforestation. Stock for this purpose is being grown in the forest nursery at Indian Head, and, commencing with the spring of 1916, it is expected that reforestation work will be carried on hereafter regularly from year to year.

Forest surveys throughout northern Manitoba, Saskatchewan, and Alberta were continued, and the reports indicate that while the stands of mature timber are a small proportion, the rate of growth of the forest is good, and good reproduction is general. There are, however, in some districts extensive areas of muskeg on which the growth is slow, and unless they can be improved by drainage they will be practic-

ally unproductive. It is expected that the surveys of the next two or three years will complete the information in regard to the forests that are of more than purely local utility, and give a comprehensive view of the whole situation which will enable a final determination of the policy of administration.

The interest in the planting of trees on the prairie farms in the western provinces continues to increase. Although the number of trees available for distribution in the spring of 1916 was much greater than for the previous year, the average number available for each applicant was slightly smaller. It is gratifying to note that the forest service of the United States, after investigating the plan of tree distribution followed by this department, has organized a system on similar lines for the western prairie states.

The formal opening of the Forest Products Laboratories was held during the year, and the work of investigation has been well started. The divisions now organized are Timber Tests, Timber Physics, Pulp and Paper, Wood Preservation, all of which cover lines of investigation that are of great importance to the industries of the Dominion, and will help toward the economical use of forest products. The demand upon the laboratories for information by business firms and the general public indicates that the work of research has not begun too soon. In fact, request has been made by important industries for the development of new divisions for investigations not yet provided for. The laboratories have proved their usefulness also in an unexpected way in assisting with investigations in the production of war munitions, and have been able to render valuable assistance in this direction.

IRRIGATION.

The outstanding feature in connection with this branch of the department's work during the season of 1915 was the almost ideal weather conditions which produced bumper crops throughout a wide area where the artificial application of water is usually necessary to produce good crops. Very little water was used for irrigation during the summer of 1915, except for alfalfa and other forage crops and for gardens. During the year 1914, southern Alberta and southwestern Saskatchewan suffered an almost unprecedented drought, with well-nigh universal crop failure; in 1915 this same district produced the largest grain crop in its history—a phenomenal crop for any district; yet the difference in rainfall throughout the growing season in these two years was not more than from eight to ten inches. This assuredly proves the immense value of irrigation to this district if a moderate amount of water is available for application at the right time.

The most important single piece of work carried on by the Irrigation Branch during the past year was the completion of the reclassification of land in the western section of the Canadian Pacific Railway Company's Bow River Irrigation Project. This work has been in hand since July, 1913, and the field work was completed early in September, 1915. It comprised the careful examination, and in many cases the actual survey, of some 454,000 acres of land in order to determine the exact area on each quarter-section that is irrigable from the existing canals, careful attention being given not only to the topographical features but to the soil conditions and the capacity of the ditches as well. The work has from its inception been carried on

under the direct, personal supervision of Mr. Gavin N. Houston, C.E., to whom great credit is due for the successful completion of an exceedingly difficult task.

Surveys were made during the year to further develop an irrigation project in the district immediately north of Lethbridge, Alta., where the settlers have intimated their desire to construct the necessary works if assured of the feasibility of the project and the sufficiency of the water supply. Some further survey work was carried on in the district south and east of Lethbridge to demonstrate the feasibility of utilizing the waters of St. Mary and Milk rivers for the irrigation of a large area which admittedly requires irrigation for its fuller development.

The usual inspection work was carried on in accordance with the department's policy of carefully supervising all water-supply projects before authorization is given for construction of the works, during the period of construction and after completion. It is believed that only in this way can the department be assured that water rights are granted and used in accordance with the spirit and the letter of the law.

The important work of stream measurement, or hydrometric surveys, has been continued and extended so as to include the principal streams in western and northern Alberta, which have heretofore been inaccessible at reasonable cost. This necessary work will be gradually extended until it comprises within its scope all the important streams in the provinces of Alberta and Saskatchewan. A full report of this work is published annually.

DOMINION PARKS.

Notwithstanding the conditions brought about by the war, the past year was one of considerable development in the Dominion parks. Although the appropriations for the year were calculated on a purely maintenance basis, much development work was accomplished through the establishment of camps of interned aliens in the parks. At the beginning of the year, large numbers of interned aliens were being maintained by the Government, and it was felt that it was not good for these people to live for months in idleness; also that it would be to their advantage to have employment in the open. By arrangement between the internment authorities and the Parks' service, four camps were established in the parks. The total number of aliens at work at the end of the fiscal year was 800. These men were employed on road and bridge construction, cutting rights of way for roads, and general clearing operations in the parks.

The outstanding feature in regard to the Dominion parks this year was the immense development of the tourist traffic. It is estimated that 50,000 people from other countries visited the Canadian mountains last year. This influx of tourists results in a large increase in the wealth of the Dominion, for this class of people undoubtedly leaves millions of dollars to circulate in the country, without taking out of the country anything tangible in exchange.

The principal work done in the National park at Banff was the regrading, widening, and resurfacing of the road from the Bow river to the Cave and Basin. This is known as Cave avenue, and is one of the best constructed roads in the park. Other noticeable improvements are the finishing and topdressing of the main travel

roads with fine limestone, giving a finished gray appearance, and the clearing of a considerable additional area of the recreation grounds.

Special gratification is felt at the capture of a herd of nearly fifty antelope. It was felt that if active measures were not soon taken the extinction of the antelope was only a matter of time. The herd which has been captured it is hoped will assure the perpetuation of this beautiful animal. The antelope are now confined in our reserve at Foremost, Alta.

The government herd of pure-blood bison at Buffalo park continues to do exceedingly well; all the animals are in excellent condition. No disease of any kind was reported during the year. The herd now numbers 2,077, an increase of 437 for the year.

The year's operations on the park farm have been most successful, resulting in an exceptionally heavy crop of grain. The yield was 30,222 bushels of high-class oats. Approximately 11,000 bushels were shipped to Rocky Mountains, Jasper and Elk Island parks, thus effecting a considerable saving on purchase elsewhere. A combined new implement shed and granary with a capacity of some 5,000 bushels was erected during the year.

For several years the suggestion has been before the department to carry on cross-breeding experiments with respect to buffalo and domestic cattle. During the year Mr. J. H. Grisdale, Director of Dominion Experimental Farms, agreed to take charge of these experiments, and has made all arrangements for carrying on the work at Buffalo park.

The completion of the new bridge over the Waterton river in Waterton Lakes park, enabling the people of southern Alberta to visit the park by a more direct route, was a cause of general satisfaction in the district, and resulted in an appreciable increase in the number of visitors to this park.

Good progress was made during the year on the automobile road under construction to the summit of mount Revelstoke in Revelstoke park. When completed this road will form an unusual attraction to visitors from Canada and other countries, on account of the great altitude to which it ascends.

Special progress has been made in respect to the protection from fire of the forest areas of the parks, with most gratifying results, no fire of any importance having been reported during the season.

DOMINION WATER-POWERS.

In view of all the circumstances, satisfactory progress has been made in all the work of the Dominion Water-power Branch at head office, and at the various permanent offices throughout the Dominion. Twenty-nine members of the staff are now with the Canadian Expeditionary Forces, and many more are preparing to go overseas.

COMPLETION WINNIPEG RIVER SURVEYS.

One of the most important field investigations the branch has had under way since its organization, namely the power and storage possibilities of the Winnipeg river, carried on under the immediate direction of Mr. J. T. Johnston, Chief

Hydraulic Engineer of the branch, has been recently completed, and a full report on the same is expected shortly from the King's Printer. This report will prove invaluable to the department in working out an efficient and effective administration of the exceedingly important water-powers of the Winnipeg river.

The departmental water-power investigation on the Winnipeg river have been more than usually comprehensive and complete, and have involved a very considerable expenditure. It was considered essential that the Government should not only secure sufficient information to enable it to evolve a scheme of development which would realize the maximum advantageous use of the river for power, but the information should be sufficient to demonstrate, beyond doubt, the feasibility of these water-powers, technically and commercially.

The fortunate power situation on the Winnipeg river cannot be duplicated anywhere on this continent. The natural power advantages of the river are unique, and the whole stretch of the river in Manitoba is under the direct and absolute control of the Dominion Government. There can be no question as to all the power of the Winnipeg river being ultimately developed, and in the most advantageous manner.

This means that there will eventually be as much, if not more, power available from the Winnipeg river than is now being developed at Niagara. What this represents to the city of Winnipeg, and the province of Manitoba, can only be realized by one who understands the tremendous import of the electro-chemical and electro-metallurgical industries of worldwide fame now firmly established at Niagara, and by one who has a proper conception of the significance of the use to which Niagara power is now put throughout the western portion of the province of Ontario by municipalities, private companies, and through the auspices of the Ontario Hydro-Electric Power Commission.

The city of Winnipeg, in the province of Manitoba, has therefore in the water-powers of the Winnipeg river, a potential assurance and guarantee of future industrial, commercial, and municipal growth, the importance of which is not generally appreciated. It is exceedingly fortunate that the Department of the Interior has, in its water-power and general land administration along the Winnipeg river, protected these potential power possibilities in every possible manner.

WATER-POWER EXHIBIT AT PANAMA EXPOSITION.

The water-power exhibit in the Canadian Pavilion at the Panama Pacific International Exposition, conceived and carried out by the engineers of this branch, with the object of calling attention to Canada's advantages as a water-power country, has already secured excellent results.

This exhibit was taken advantage of as a basis for a propaganda to interest delegates to various technical and professional societies meeting at San Francisco during the exposition, in Canada's great water-power resources, especially during the International Engineering Congress, at which Mr. J. B. Challies, Superintendent of Water-powers, along with Mr. F. H. Peters, Commissioner of Irrigation, were the engineering representatives of the Canadian Government. At this congress the following two papers, "Electric Power in Canadian Industry," and "Canadian Hydraulic Power Development," by Colonel C. H. Mitchell, Consulting Engineer to

the Dominion Water-power Branch, were read, and pre-arranged discussions thereon were participated in by engineers conversant with the power situation in Canada. In connection with this congress, a large supply of printed matter regarding Canada's water-powers was obtained from various government authorities for distribution. The branch also undertook the preparation and publication of the five following monographs on the water-power situation in Canada:—

Water-powers of British Columbia, by G. R. G. Conway, Consulting Engineer, Toronto.

Water-powers of the Prairie Provinces, by P. H. Mitchell, Consulting Engineer, Toronto.

Water-powers of Ontario, by G. H. Acres, Hydraulic Engineer, Ontario Hydro-Electric Power Commission, Toronto

Water-powers of Quebec, by F. T. Kaelin, Assistant Engineer, Shawinigan Power Co., Montreal.

Water-powers of the Maritime Provinces, by K. H. Smith, Resident Engineer, Dominion Water-power Branch, Halifax, N.S.

NO NEW POWER PLANTS.

Actual construction operations have not been commenced on any new water-power projects in the Prairie Provinces during the past fiscal year; at the same time, preparations have been under way for the commencement of several important developments.

DELAY IN CONSTRUCTION ADVANTAGES.

While the present financial stringency may cause some delay in the commencement of new water-power projects, the delay may, in the long run, be fortunate, as it allows the branch an opportunity of proving or disproving, beyond doubt, the economic features of certain important projects in the Prairie Provinces, which, owing to their strategic location close to commercial centres, have already attracted the promoter and the capitalist and caused them to expend considerable money endeavouring to work out schemes of development which could secure the approval of the Government. Continuous hydrometric studies for a period of several years, and a careful analysis of the probable future demands for power are essential to the final determination of the economic features of every power project, and this is especially so in some of the rivers of the Prairie Provinces, where flow conditions are erratic, and there are competitive sources of power-producing agencies.

WESTERN CANADA NOW COVERED BY HYDROMETRIC SURVEYS.

It is satisfactory to report that all the important rivers in the provinces of Manitoba, Saskatchewan, Alberta, and British Columbia are now included in the hydrometric work of this department. This work is all being carried on under the most approved practice by qualified technical officers.

WATER ADMINISTRATION IN RAILWAY BELT.

There are many outstanding matters between this department and the provincial Department of Lands, respecting administration of water in the Dominion Railway Belt, which have yet to be settled. Every effort is being made to have these matters satisfactorily adjusted with the least possible delay. Mr. H. W. Grunsky, who acted as legal adviser to the province of British Columbia for several years in connection with water administration, has been engaged for some months in working out, under the direction of Mr. S. Maber, the Superintendent of the British Columbia Lands Branch, and the Superintendent of Water-powers, the details of a final scheme of water administration by the province, and land administration by the Dominion, which will be satisfactory to all concerned.

WATER-POWER REGULATIONS REQUIRE REVISION.

Practicable and suitable water-power regulations are a fundamental pre-requisite if the unique results of our water-power investigations are to find their full fruition. Experience has shown that one of the most essential features of successful water-power administration is the adoption of satisfactory regulations which will not only protect the public by guaranteeing conservation in construction methods, control of rates, reasonable rentals, etc,. but which will also be sufficiently attractive to the financier from a commercial standpoint. Our water-power regulations in some particulars need revision, and it is hoped that before another fiscal year is ended these necessary revisions will have been carried out.

NOVA SCOTIA WATER-POWERS.

An arrangement has been completed with the Nova Scotia Water-power Commission for a co-operative investigation of the water-power resources of that province. So far the progress of the work has been very satisfactory. A great deal of territory is being covered at a minimum of expense. At the request of the provincial authorities, the co-operative agreement has been extended for another fiscal year.

FOREIGN VISITORS.

Several distinguished visitors from foreign countries have spent some time studying our methods of water-power administration, more especially our methods of water-power investigation.

LAKE OF THE WOODS REFERENCE.

The Lake of the Woods reference before the International Joint Commission, which is of such vital importance to the power situation on the Winnipeg river, has still to be determined. It is expected, however, that a tentative report, at any rate, will be forthcoming from the commission in the near future.

A special sitting of the commission at Winnipeg in January, was held to enable the power interests to present their views. The final hearing of the argument of counsel representing the Governments, and the various power and private interests affected, will be heard in Washington, early in April.

WATER-POWER LANDS CANNOT NOW BE SOLD.

In recent years, the policy of the Government with respect to the control and administration of water-powers in the western provinces has become firmly established. The trend of opinion has been toward more strict and stringent amendments to the regulations, which will provide for the complete and permanent control by the Crown of water-powers, both developed and undeveloped. Essential to such complete control is the retaining of title by the Crown of water-powers. To provide for this beyond doubt, section 35 of the Dominion Lands Act was amended at the last session, to absolutely prevent the sale, occupation, or disposition in any other way, except under the Water-power Regulations, of lands valuable in connection with water-power development.

RE-PURCHASE OF SILVER FALLS LANDS.

The necessity for the Crown retaining control of lands valuable for water-power purposes, necessitated some action on the part of the Dominion Government to recover certain lands dominating one of the most important power sites on the river, namely, that at Silver falls, sold by auction in 1906 to certain Chicago interests under a ten-year time sale. When the sale of these properties was carried out ten years ago, there was no well-defined policy of water-power administration.

As the particular parcels referred to dominated one of the most important undeveloped power sites on the Winnipeg river, if a fee simple title had been conveyed in the form of patent in vogue at the time of the auction sale, which form of patent did not reserve the rights of the Crown in the bed of the stream, and which form of patent the purchasers would probably have had some right to claim, the Dominion would have lost direct control over the Silver falls power site.

There was, however, more involved than the natural fall of the river at Silver falls. The extensive and elaborate scheme of power concentration along the stretch of the river between Lac du Bonnet and lake Winnipeg, worked out after several years' investigation by the engineers of this branch, involves a method of development which contemplates three concentrations of the natural fall of the river, at Pine falls 63,100 horse-power, at Great falls 95,500 horse-power, and at Lower McArthur falls 30,700 horse-power, all in terms of continuous 24-hour power. The Pine falls concentration scheme contemplates the use of the natural fall of the river at Pine falls, Silver falls, and part of Whitemud falls.

If the larger portion of this natural fall of the river, that at Silver falls, were alienated from the Crown, it would be impossible for this concentration scheme to be carried out. It was absolutely necessary, therefore, from both a conservation and an administrative standpoint, that some action should be taken with a view to retaining the control of the Crown in Silver falls power site.

The whole situation was frankly placed before Mr. H. M. Byllesby, president of the H. M. Byllesby Company of Chicago, when the point of view of the Dominion Government, its system of water-power administration, and the results of the investigations of this branch along the Winnipeg river were explained. Mr. Byllesby agreed to surrender all the interests of the H. M. Byllesby corporation in these parcels upon

the Government refunding to him the actual sums paid in to the department to date for these lands, without interest. But one condition was stipulated, that the re-purchase was to be carried out at once. Parliament not being in session, and the case being urgent, arrangements were accordingly made for securing the necessary funds to re-purchase these properties, some $100,188.51. by Governor's warrant.

POWER AND STORAGE INVESTIGATIONS IN THE PROVINCES OF ALBERTA AND SASKATCHEWAN.

During the past year this work has mainly consisted of investigations of water-power applications, some general reconnaissance work and the completion of special survey work in various parts of the two provinces, by Mr. C. H. Attwood, engineer in charge.

These matters represent substantial progress in all the regular work of the branch, and the achievement of far-reaching and advantageous results along new channels. The scope and usefulness of the branch is extending in a very gratifying way.

SCHOOL LANDS.

No general auction sales of school lands were held during the past fiscal year in view of the financial conditions prevailing throughout the country. A few parcels were, however, sold comprising 1,461·83 acres, for $21,141.68, an average of $14.46 per acre.

The total net area sold in each province from the beginning to the 31st December, 1915, after making the necessary adjustments on account of cancellations, changes in areas, etc., was as follows:—

Manitoba	636,716 60	acres for	$ 6,168,446 29
Saskatchewan	603,618 41	"	8,776,375 72
Alberta	501,732 06	"	6,438,642 34
Total	1,742,067 07	"	$21,383,464 35

The revenue from other sources for the fiscal year was as follows:—

Grazing	$75,682 38
Coal	9,398 67
Hay	10,359 17
Timber	3,930 18
Petroleum and gas	1,955 21
Cultivation permits	599 95

The total net revenue from each province during the fiscal year was as follows:—

Manitoba	$244,363 21
Saskatchewan	472,942 05
Alberta	212,284 31
Total	929,589 57

The following amounts were paid over to each province under the provisions of the Orders in Council in that behalf, being the net revenue received from the school lands in these provinces, less the principal moneys of sales, and less the expenditure, namely:—

Manitoba	$ 62,644 25
Saskatchewan	175,675 05
Alberta	91,072 45

In addition to the foregoing the following amounts were paid over to each of the Provincial Governments as interest on the School Lands Fund for the fiscal year, namely:—

Manitoba	$113,360 74
Saskatchewan	97,371 30
Alberta	78,154 28

This makes the total amount paid to each province for the fiscal year as follows:

Manitoba	$176,004 99
Saskatchewan	273,046 35
Alberta	169,226 73

The amount standing to the credit of each of the School Lands Funds on the 1st April, 1916, was as follows:—

Manitoba	$3,858,208 55
Saskatchewan	3,349,465 69
Alberta	2,630,779 53

The total expenditure for the fiscal year on all accounts was as follows:—

Manitoba	$10,477 32
Saskatchewan	10,864 33
Alberta	11,029 13
Total	$32,370 78

MINING LANDS.

During the year, prospecting and mining in the western provinces and territories, especially in the northern portions of the provinces of Manitoba and Saskatchewan, have shown very pronounced activity, entries having been granted for 1,273 quartz mining claims in connection with new discoveries made. The mining rights of all persons accepted for service in defence of the Empire are protected during the period of the war, and as the revenue from mining lands is derived entirely from fees, rental, and royalty, this protection has resulted in a decrease of revenue in connection with mining rights.

Boring operations for the discovery of petroleum are still being actively carried on in the provinces of Saskatchewan, Alberta, and British Columbia, and discovery has been made at different points of natural gas in large quantity, which is being used for domestic and commercial purposes, as well as petroleum in considerable quantity.

The gold production of the Yukon Territory during the year was $4,458,278, being a slight decrease as compared with previous years. Individual mining is now confined principally to the more recent discoveries, while on those streams which have been operated for a number of years, dredging, hydraulicing, and other forms of intensive operation have to a large extent superseded the more primitive forms of mining.

Coal-mining operations are being extensively carried on in Alberta and southern Saskatchewan, while in the Yukon Territory a sufficient quantity is being mined to satisfy the local demand.

TIMBER.

The total area held under license in Manitoba, Alberta, and Saskatchewan, and in the Railway Belt in the province of British Columbia, is 7,023·57 square miles, and under permit 805·17 square miles.

The operations conducted on berths held under license were as follows:—

	Feet B.M.
Sawn lumber	222,022,481
Railway ties	85,378
Laths	33,144,867

The operations conducted on berths held under permit were as follows:—

	Feet B.M.
Sawn lumber	13,849,153
Railway ties	151,370
Shingles	2,980,000

The above shows an increase of 36,412,731 feet of lumber b.m. manufactured over the preceding fiscal year.

The revenue derived from timber cut on Dominion Lands amounted to $343,624.49, which is an increase over the revenue of the previous year of $72,205.77.

GRAZING.

On the 31st March, 1916, there were in existence 3,352 ranches, covering a total area of 5,215,067 acres, being an increase over the previous year of 461,512 acres.

During the year there were 895 new grazing leases issued.

The revenue derived from rentals on grazing leaseholds amounted to $113,370.60, being an increase over the previous year of $18,140.61.

The revenue derived from hay leases and permits amounted to $7,492.32, which is slightly less than the revenue for the preceding year.

I have the honour to be, sir,

Your obedient servant,

W. W. CORY,

Deputy Minister of the Interior.

PART I.

DOMINION LANDS

DOMINION LANDS

No. 1.

REPORT OF THE COMMISSIONER.

This is a report for the twelve months ending March 31, 1916, on the Dominion Lands Branch of this department, together with the report of the chief inspector of Dominion Lands Agencies, the reports of the inspectors of Dominion Lands Agencies, and the agents of Dominion Lands for the several districts.

The following summary has been prepared of the work transacted in the Dominion Lands Branch during the period mentioned, as compared with the corresponding twelve months of the previous year:—

	1915.	1916.
Number of files dealt with	197,148	164,928
Letters written (including circulars, reports, etc.)	190,727	
Triplicate copies	97,672	
Letters written	.....	108,612
Triplicate copies	.....	76,670
Circulars	.....	63,859
Total	288,399	249,141
Applications for Patent—		
Number examined	46,197	31,308
New applications	21,039	17,778
Applications accepted and notifications sent out	21,802	16,598

J. W. GREENWAY,

Commissioner of Dominion Lands.

No. 2.

REPORT OF THE CHIEF INSPECTOR OF DOMINION LANDS AGENCIES.

During the year I was instructed to hold many investigations of a complicated character, twenty-one of which were under oath authorized by order in council, and forty-four of a less serious nature. I have at the present time seven investigations on hand to dispose of, three of which are under order in council and four where sworn statements will have to be taken. On June 24, I met with a serious accident, north of Prince Albert, while holding an investigation in connection with a complaint made against one of our inspectors in the Prince Albert Agency, and was unable to hold any investigations until the middle of September. This will account for the fact that I am carrying over seven investigations from the past year. I attended to my office duties during this time, but was unable to go on the road.

On June 16, 1915, I attended the opening of the Dukhobour lands, which was held at Pelly village in Saskatchewan. There were about six hundred people present in connection with this opening and all the parcels of land were disposed of on that day, with the exception of eight. On September 21 last, the old Lake Manitoba forest reserve was thrown open for homestead entry at Dauphin, and I visited the agency on the day that the lands were made available. One hundred and thirty-six quarters were taken on that day, and several entries have been made since that time in the reserve. On October 20, 1915, the Woodlinger and Balcovski ranch at Gull lake was thrown open for homestead entry at Maple Creek, and I visited the agency in order to be present at the opening. All the quarter-sections, namely, ninety-eight parcels, were entered for.

During the year the Prince Albert and Swift Current offices were removed to more commodious quarters.

I visited practically all the land offices in Manitoba, Saskatchewan, and Alberta, during the year and found everything satisfactory, although some of the offices were over-rushed with work in connection with the seed-grain and relief liens, and a good many of the staffs were working overtime in order to cope with the increase in work.

On October 15 last, a new land agency was opened at Peace River Crossing in place of the sub-agency which had been established there for some time. This agency was opened without adding additional expense to the department, as the staff was taken from other offices in Saskatchewan and Alberta, with the exception of Mr. Carson who was formerly sub-agent and was appointed agent.

Several sales of valuable lands were disposed of by public auction under the usual homestead conditions. One was held at Regina on January 5; one at Prince Albert on February 7, and one at Saskatoon on March 8. Owing to the severe storm raging at the time, the sale at Regina was a failure, no bidders being present for the lands advertised. In Prince Albert two parcels were disposed of, one at the upset price and one slightly in advance. In Saskatoon the parcel offered was disposed of at a good advance on the upset price. I feel this is the better course to pursue in connection with odd quarter-sections in well-settled districts, as no doubt the vacant lands are getting more valuable where they are surrounded by settlers and in close proximity to towns and villages.

Mr. F. S. Szablewski, Chief Homestead Inspector, who is attached to my office in Minnedosa, has assisted and held many investigations amongst the foreign element

and has proved to be a great source of strength to the office in connection with the disputes among foreign people throughout the three western provinces.

Mr. O. Neff, Inspector of Dominion Land Agencies for Manitoba and Saskatchewan, and Mr. J. W. Martin, Inspector for Alberta and British Columbia, will furnish the department with a detailed account of the work done throughout the provinces under their jurisdiction in connection with the land agencies, sub-agencies, and homestead inspectors.

During the year several of our best employees enlisted for active service, and we have been trying to run the offices without employing additional men to take their places.

During the year I travelled 22,978 miles by rail and 370 miles by wagon.

At the present writing spring appears to be opening up under very favourable circumstances and the prospects look bright for the coming year.

H. G. CUTTLE,

Chief Inspector of Dominion Lands Agencies.

No. 3.

REPORT OF INSPECTOR OF DOMINION LANDS AGENCIES, BRANDON, MAN.

Attached hereto you will find statements of the work performed by the Dominion Land Agencies, Dominion Land Sub-agencies, and homestead inspectors.

There are fourteen agencies, forty-three sub-agencies, and thirty-eight homestead inspectors assigned to this office, all within the provinces of Manitoba and Saskatchewan. All the agencies and sub-agencies have been inspected as often as seemed necessary during the year, and the various officials have performed their duties in a satisfactory manner.

A number of matters have been referred to me for investigation during the year; inquiries have been held and reported upon.

I am pleased to be able to say that the farmers in the two provinces have had a very successful year, there having been an abundant crop and fair prices. Notwithstanding the demand for the various purposes arising on account of the war every one seems to be prosperous and contented.

O. NEFF,

Inspector Dominion Land Agencies.

DOMINION LANDS AGENCIES.—Manitoba and Saskatchewan.—Principal Transactions for the Department Year ending March 31, 1916.

Agencies.	Homestead entries granted.	Land Sales.			S. A. Script.	Applications for Patent received.	Land entries cancelled.	Timber permits issued.	Hay permits issued.	Letters.		Revenue.	No. of Staff.	Expenditure.	
		Ordinary and School Lands.	Pre-emptions.	Purchased Homesteads.						Received	Sent.			Salaries.	Disbursements.
												$ cts.		$ ets.	$ ets.
Battleford	739	41	52	21	.....	1,024	671	410	511	31,186	31,712	64,670 63	9	9,809 84	1,514 09
Brandon	86	16	.....	.....	.....	15	22	.....	190	4,475	5,047	8,354 35	3–2	2,725 00	194 35
Dauphin	1,635	15	.....	.....	.....	314	488	255	675	35,685	26,269	31,500 04	8	8,577 91	1,196 92
Estevan	23	1	.....	.....	.....	30	18	.....	137	3,680	1,704	6,218 08	3	3,300 00	191 08
Humboldt	546	35	.....	.....	.....	637	359	101	555	18,055	19,669	15,124 41	8–7	7,619 55	748 95
Maple Creek	749	14	558	46	.....	1,652	509	284	795	55,251	47,833	193,802 50	14	12,139 92	1,490 46
Moosejaw	708	25	362	38	.....	1,980	1,104	22	761	50,181	46,973	213,783 59	15–13	12,688 86	1,837 50
Prince Albert	1,227	55	1	11	.....	794	558	664	712	34,051	35,889	94,600 80	15–24	18,039 65	1,224 61
Regina	85	7	.....	.....	.....	156	66	4	416	8,018	8,361	11,110 14	4	4,459 92	386 39
Saskatoon	440	50	121	54	.....	1,719	445	23	646	44,039	32,591	168,212 26	16–13	13,559 28	1,875 08
Swift Current	763	34	487	40	.....	2,200	1,531	41	674	38,157	40,898	246,065 94	16	15,665 24	2,325 00
Weyburn	309	3	118	9	.....	437	256	2	385	12,681	8,355	66,768 57	5	5,079 69	469 20
Winnipeg	2,238	54	.....	.....	.....	360	1,036	.....	.....	28,408	33,594	43,316 58	16–14	15,743 28	1,944 95
Yorkton	664	28	.....	.....	.....	501	302	101	311	13,922	15,471	20,212 32	6–5	5,842 60	633 52
Total for year 1915 1916	10,212	378	1,699	219	.....	11,819	7,365	1,907	6,768	377,799	354,366	1,183,740 21	137	135,250 74	16,532 10
1914–15	13,210	403	2,115	236	.....	14,693	7,624	6,169	4,990	331,702	347,059	858,905 06	138	131,994 17	14,470 17
1913–14	17,581	581	4,498	534	28	19,581	12,079	7,596	4,565	351,861	373,329	1,326,260 20	154	147,978 06	15,801 30

DOMINION LANDS SUB-AGENCIES.—Manitoba and Saskatchewan.—Work performed during the Departmental Year ending March 31, 1916.

Name.	Sub-Agency.	Applications for Homesteads.	Applications for purchased Homesteads.	Applications for Pre-emptions.	Applications for Patent.	Applications for Inspection.	Applications for Timber permits.	Applications for Hay permits.	Amounts remitted to Land Offices.	Expenditure. Salary.	Expenditure. Postage and Commissions.	Remarks.
									$ cts.	$ cts.	$ cts.	
S. E. Spicer	Alsask	16	2	10	23	20			1,221 60	600 00	10 49	Attached to Empress Jan. 31st.
S. Fjelsted	Arborg	94			41	37			1,080 00	300 00	11 38	
T. G. Ross	Assiniboia	179	7	118	330	303	22	125	8,369 11	600 00	41 28	
Jos. Roberts	Blaine Lake	110			117	57	32	63	1,577 00	600 00	22 14	
J. W. Simpson	Canora	124			35	53	5	17	1,708 30	900 00	24 21	
H. P. Turner	Biggar	66	3	7	243	115	94	52	2,869 35	600 00	43 85	
A. Robertson	Davidson	31			61	37		1	531 90	480 00	14 86	
Wm. Urton	Duck Lake	31		1	61	25	3	30	776 45	480 00	8 07	
T. J. McGregor	Edam	96			192	60	21	37	1,810 29	600 00	16 04	
John Cusack	Empress	32	2	19	101	26	4	6	2,514 90	150 00	14 92	
Wm. Banks	Gull Lake	120	7	104	453	153	2	86	5,355 05	900 00	52 87	
M. H. Klassen	Herbert	85	4	40	339	150	10	131	4,072 11	900 00	71 38	
Geo. Gregg	Hanley	23	3	7	50	35	1	13	1,794 35	600 00	21 36	
Aaron Read	Kerrobrt	106	14	35	277	95		38	6,525 52	600 00	40 83	
J. H. Elliott	Kindersley	54	8	8	275	86		38	4,871 23	775 00	52 63	(G. G. Blackstock enlisted Aug.
W. H. Holland	Lloydminster	60			66	27	6	20	1,014 30	600 00	19 03	(16, J. H. Elliott appointed Aug.
W. L. Craddock	Lanigan	25			55	16		13	380 50	420 00	15 97	1.
C. H. Anderson	Le Pas	3					5	24	2,967 70	900 00	29 90	M. Claims 430
R. Newth	Lipton	9			2	4	2	15	172 00	480 00	5 43	P. of Att. 139.
H. Hodges	Makinak	316			40	58	46	75	3,533 00	600 00	42 81	Trans. M. Claims. 76.
E. M. Reid	Macklin	37	4	7	147	37		38	4,875 38	600 00	22 02	Cert. of Work. 35.
W. Young	Mellort	182	1		184	71	31	61	3,019 75	900 00	31 94	
J. R. Chisholm	N. Battleford	217			161	116	106	102	3,253 58	600 00	32 16	
J. J. McGurran	Nokomis	8			34	13		12	419 30	300 00	5 88	
S. Arnason	Pincy	48			17	17	27	15	545 25	300 00	5 73	
A. Liboiron	Pontcix	260	6	181	547	264	10	42	6,569 30	780 00	62 46	
E. C. Medland	Punnichy	46			44	32	2	26	598 20	300 00	11 77	
D. McMurphy	Preeceville	92			81	38	10	34	1,277 75	600 00	13 15	
R. S. Dundas	Pelly	102			36	76	65	40	1,357 30	600 00	21 92	
V. W. Johnson	Rossburn	82			6	9		5	907 25	600 00	9 22	On seed grain April.
E. St. G. Hodson	Resthern	23		1	18	14		18	818 45	600 00	12 42	F. M. Hodson app'd. Acting-Agent.

J. H. Canham	Sprague	9			2	7	1	1	374 75	300 00	5 18	Sept. 17, Sub-Agent enlisted.
J. W. Hanger	Shellbrooke	140			137	59	112	54	1,875 40	600 00	38 86	
J. Probinzanski	Stuartburn	12				1		5	145 00	70 00	3 54	Closed October 31.
F. Serase	Swan River	232			41	47	44	18	1,824 05	480 00	33 59	
W. M. Spencer	Sheho	22			77	25		20	459 50	300 00	8 78	
Wm. Buxton, sr	Tisdale	236			127	62	34	33	2,728 65	600 00	37 27	
S. Humphreys	Unity	80	7	31	154	58	37	51	2,816 20	600 00	24 54	
J. Kulsczkowski	Vita	36			13	1	1	22	635 10	75 00	7 29	Closed August 31.
J. J. Gunn	Wilkie	23	4	4	49	27	12	11	1,034 55	600 00	16 29	
J. Cleve Hearn	Wadena	121			179	55	2	28	1,660 55	770 00	26 96	
S. Lytwyn	Winnipegosis	99			3		12	60	1,254 25	300 00	18 46	
P. Lapointe	Willowbunch	112	7	50	258	127	8	86	3,720 90	720 00	18 58	
F. N. Rowe	Wynyard	52			52	31	1	40	705 65	600 00	12 95	
O. Tisdale	Watrous	73			84	40		11	1,033 90	287 50	11 94	Commenced April 15.
J. D. Murdoch	Zealandia	42	3	7	102	47		18	4,437 98	900 00	32 84	
Totals		3,986	82	630	5,314	2,631	768	1,635	91,492 60	25,467 50	885 19	
Compared with 1914-15		5,015	91	684	7,361	2,506	1,452	738	99,599 46	24,810 00	989 34	
Compared with 1913-14		6,578	204	1,164	9,899	3,900	1,753	1,177	136,314 75	23,792 75	1,280 99	

STATEMENT showing principal work performed by Homestead Inspectors in Manitoba and Saskatchewan for Departmental year ending March 31, 1916.

Name.	Headquarters.	Land Inspections made.	Applications for Patent made.	Miles Travelled.		Travelling expenses—for self and team.	Salaries.	Remarks.
				Wagon.	Rail.			
						$ cts.	$ cts.	
D. Anderson	Battleford	174	61	5,174	190	1,036 45	1,300 00	
A. C. Dewar	"	192	50	4,631	1,036	1,044 50	1,300 00	
A. C. Elliott	"	190	71	4,913	2,768	990 30	1,300 00	
A. C. Douglas	Brandon	108	23	1,658	3,395	404 40	1,450 00	On seed grain April, at S. Current
Geo. L. Speers	Dauphin	755	70	5,706	3,431	1,283 65	1,500 00	Jan.
Thos. C. Martin	"	332	118	4,251	4,000	1,207 75	1,200 00	
Thos. C. Secord	"	468	5	4,103	276	1,638 10	1,200 00	
Geo. McGowan	"	365	90	3,657	3,556	1,176 20	1,300 00	Suspended for February.
W. Morrison	Estevan	90	13	1,666	6,523	619 48	1,200 00	On seed grain April to May 10.
Arthur Smyth	Humboldt	473	28	7,177	1,967	1,195 80	1,200 00	On seed grain April to May 16.
A. L. Roth	"	162	5	4,542	1,693	1,055 60	1,200 00	On seed grain April and May.
W. S. Jones	Maple Creek	148	88	3,601	44	804 70	1,200 00	On seed grain April to May 7, leave January and February.
Peter McLaren	"	287	507	5,213	1,519	1,121 50	1,200 00	On seed grain April to May 15.
W. Steer	"	170	200	4,327	.....	979 05	1,200 00	
W. H. Erratt	Moosejaw	153	54	3,543	510	974 15	1,200 00	On seed grain January and March
P. R. Brandt	"	78	20	1,375	1,608	361 75	400 00	On seed grain April, dismissed July 31.
J. G. Rathwell	"	213	40	2,548	1,846	933 35	1,200 00	On seed grain April and February.
W. J. Monckton	"	101	49	3,212	4,548	1,131 55	1,425 00	
F. J. Bigg	Prince Albert	274	28	3,851	900	826 30	1,200 00	On seed grain April to May 6, Ill January and February.
T. L. Sutherland	"	211	1	2,668	.....	654 10	500 00	On seed grain April, dismissed August 19.
D. L. Burgess	"	134	1	2,320	520	587 25	700 00	Appointed September 2.
J. B. Boucher	"	193	1	5,166	792	1,227 45	1,200 00	
J. F. McKenzie	"	263	16	4,282	2,531	1,169 90	1,200 00	On seed grain April to May 13.
C. J. Ouelette	Regina	108	18	2,314	6,606	874 42	1,300 00	On seed grain April.
R. H. Dickson	"	90	16	1,894	4,880	857 74	1,200 00	On seed grain April.
F. M. Collins	Saskatoon	145	58	3,527	1,471	1,256 70	1,200 00	On seedgrain April, Jan. & March
J. A. Balfour	"	129	133	3,026	5,638	1,392 83	1,500 00	
A. E. Mosses	"	165	252	3,745	2,110	1,275 75	1,200 00	Acting sub-agent Kindersley Aug. 16–Sept. 25.
C. E. Barr	"	116	60	3,150	1,530	1,065 10	1,200 00	On s. g. April, at D.L.A. Jan., Feb. and Mar.

J. Furniss	Swift Current	120	71	4,537	94	969 20	1,200 00	On seed grain April.
Wm. Shields	"	150	32	4,058	.....	877 05	1,083 30	Resigned to enlist Jan. 31.
J. A. McDonald	"	159	105	4,190	302	1,016 25	1,300 00	On seed grain April to May 15.
E. J. Hober	Weyburn	235	133	4,696	3,840	1,718 20	1,200 00	
Geo. Dickin	"	3	822	394	16,696	1,149 75	1,300 00	
Louis Lepine	Winnipeg	275	22	3,022	4,110	1,428 20	1,200 00	
W. D. Gillespie	"	365	40	4,126	1,850	1,059 80	1,200 00	
W. Lagimodiere	"	412	41	3,811	3,165	1,509 70	1,500 00	
Paul Reykdal	"	502	65	4,407	2,611	1,264 45	1,300 00	On seed grain April to May 25
Max Oughton	"	165	46	2,704	472	567 10	1,150 00	Resigned March 15th.
Adolph Henke	Yorkton	281	25	5,104	1,198	1,104 55	1,200 00	On seed grain April.
R. J. M. Parker	"	312	75	3,800	2,226	1,110 00	1,200 00	On seed grain April to May 19.
Totals		7,266	3,553	152,089	102,462	42,320 17	49,208 30	
Compared with 1914–15		9,173	4,751	167,632	117,878	43,815,19	49,858 31	
Compared with 1913–14		8,221	3,755	166,373	229,438	43,472 12	48,854 99	

No. 4.

REPORT OF INSPECTOR OF DOMINION LANDS AGENCIES, CALGARY, ALTA.

Attached hereto will be found schedules A, B and C, showing the principal transactions of the different land agencies in Alberta and British Columbia and those of the sub-agencies and also those of the homestead inspectors in the same territory.

Schedule A shows a comparison of the work performed during the year just ended, with that done during the preceding year, from which you will note that there has been considerable of a falling-off in some branches, while in others the work has been heavier. The revenue, of course, is by no means so large, in view of the fact that during the present year oil business has been practically nil compared with the previous period.

The volume of business shown according to figures, however, is not a criterion of the volume of work entailed in the carrying on of the general business of the agencies. For instance, none of the agencies, according to the figures, received much credit for the volume of work which has been done in connection with the petroleum business of the previous year and also the work entailed on account of seed grain and relief transactions.

It would also appear that though the revenue had decreased, the number of employees had not been reduced in proportion. This is not the case, as a large number of our clerks have joined the colours and are at the front serving their country in another capacity.

The Peace River Crossing office was opened since the date of the last report, a district having been set aside for same from the Grouard and Grande Prairie districts. The office has been runing very smoothly since the beginning. It is well officered by competent officials transferred from different agencies throughout the West.

Crops were excellent in my territory last season and this year they promise to be as good.

J. W. MARTIN,
Inspector.

A.—Dominion Lands Agencies.—Principal Transactions for the Departmental Year ending March 31, 1916.

Agency.	Period.	Homestead entries granted.	Land Sales.			Applications for patent received.	Land entries cancelled.	Permits issued.		Letters.		Revenue.	No. of Staff.	Expenditure.	
			Ordinary and School Lands.	Pre-emptions.	Purchased Homesteads.			Timber	Hay.	Received.	Sent.			Salaries.	Disbursements.
												$ cts.		$ cts.	$ cts.
Calgary	—	686	29	232	23	2,468	751	297	816	100,228	67,596	211,792 87	27	24,042 33	3,180 71
Edmonton	—	3,199	129	2	1	2,053	2,107	1,448	1,118	76,759	100,248	188,002 84	31	27,367 27	3,930 80
Grouard	—	367	9			95	209	223	90	4,194	5,793	6,654 64	5	5,291 81	1,401 81
Grande Prairie	—	863	37			399	238	318	166	8,376	7,198	14,379 44	4	3,714 47	1,010 00
Kamloops, B.C.	—	236	19	31		120	75	378	13	12,412	11,437	26,593 45	5	6,000 00	504 57
Lethbridge	—	201	29	39	11	580	226	226	89	42,155	37,171	107,992 99	6	6,023 73	1,678 50
Medicine Hat	—	398	7	245	39	1,316	561	330	467	23,661	24,735	159,217 85	11	1,126 68	1,121 95
New Westminter, B.C.	—	122	6			25	79			2,236	2,089	5,756 92	3	3,624 97	230 00
Peace River	6 Months.	226	13			51	45	388		2,332	2,354	5,964 98	5	2,805 00	778 24
Revelstoke, B.C.	—	54	25			16	42	66		9,456	9,626	25,051 43	4	3,979 96	343 69
Red Deer	—	431	13	61	19	808	369	147	569	25,155	19,928	53,600 42	11	9,919 96	1,185 20
Totals		6,783	316	610	93	7,931	4,702	3,821	3,328	306,964	288,175	805,007 83	112	93,896 24	15365 47
Total year 1914-15		10,872	355	745	125	9,078	6,247	5,156	2,164	340,634	314,726	1,737,422 60	109	101,842 89	18900 72

B.—Dominion Lands Sub-Agencies.—Work performed during the Departmental Year ending March 31, 1916.

Name of Sub-agent.	Sub-Agency.	Period. and Agency.	Applications for Homesteads.	Applications for purchased Homesteads.	Applications for Pre-emptions.	Applications for Patent.	Applications for Inspection.	Applications for Timber permits.	Applications for Hay permits.	Amounts remitted to Land Offices.	Expenditure. Salary.	Expenditure. Postage and Commissions.	Remarks.
										$ cts.	$ cts.	$ cts.	
Spicer, S. E.	Alsask	—	71	7	47	331	93	78	18	3,988 80	600 00	48 66	
Rennison, W.	Athabaska	—	124			171	70	40	72	1,590 06	780 00	26 85	
Ostigny, N.	Bonnyville	—	101		1	53	10	28	61	1,290 91	420 00	16 10	
Binns, H. P.	Brooks	—	41	1	21	155	46	2	2	2,219 31	600 00	29 65	
Mercer, R. M.	Castor	—	49	7	9	113	41	1	56	2,053 99	600 00	23 49	
Davidson, D.	Daysland	—	12			13	3		6	152 60	300 00	6 69	
Walsh, J. J.	Edson	Acting	78			21	27	6	21	830 19	300 00	15 42	Sub-agent on active service.
Brown, Alex.	Entwistle	—	54			90	23	35	31	770 89	480 00	19 34	
Cusack, John	Empress	6 months.	27	3	15	147	31			7,740 07	150 00	33 51	
Libby, J. J.	Ft. Sask	—	11			37	10	18	20	456 38	600 00	7 52	
McGowan, John	Frog Lake	—	29			86	12	7	11	327 50	300 00	5 22	
Wilson, W. C.	Ft. McMurray	6 months.	8			6				180 00	300 00	3 14	
Gody, J. C.	Golden	—	22		7	15	11	31	2	2,418 30	600 00	17 63	
Snowdon, Thos.	Grassy Lake	—	10	3	6	159	64	15		1,459 55	480 00	14 70	
Baly, Hamilton	Greencourt	2 months.	11			14	2	1	5	127 75	50 00	2 04	Transferred to Whitecourt.
Trenaman, J. C.	Hanna	—	57	3	20	439	106			5,130 10	600 00	56 13	
Stewart, Jesse	Innisfail	—	23		1	35	20	4	26	664 36	600 00	13 90	
Montgomery, J. J.	Innisfree	—	14			41	35	1	5	161 65	300 00	6 57	
Inglis, R. H.	Lacombe	—	14		1	34	10	7	8	505 65	600 00	3 21	Active service.
Legoff, V.	Lac La Biche	—	117			13	42	22	84	1,342 75	300 00	10 75	
Klien, P. O.	Leduc	—	25			22	7	18	22	492 45	480 00	13 59	
Holland, W. H.	Lloydminster	—	48			55	22	12	7	540 40	600 00	14 82	
Whitaker, J. M.	Mosside	—	28			111	4	7	29	361 89	300 00	7 04	
White, W. F.	Munson	Acting	30	1	19	120	64	3	40	1,947 75	300 00	13 45	
Rhodes, Chas. E.	Macleod	—	41	2		24	34	60	1	887 35	571 00	12 58	Active service.
McLean, D. E.	Nanton	—	11		1	15	8	8	1	329 06	300 00	4 60	
Meacham, W. R.	Oyen	—	82	3	45	482	124		222	3,714 30	300 00	24 62	
Craig, R. A.	Olds	—	22	1		46	16	5	5	555 52	600 00	16 54	
Carson, J. E.	Peace R. Cros.	7 months.	268			4	119	57	31	3,027 88	650 00	10 25	
McDonald, S. A.	Pine Creek	—	77			117	32	53	7	810 22	600 00	15 38	
Franks, T. W.	Ponoka	—	51	1	5	78	37	1	16	908 23	540 00	18 38	
King, G. A.	Provost	—	108	4	47	319	106	23	63	3,316 08	540 00	44 39	

Saloway, Geo	Pouce Coupe	6 months.	33			19	16	34		344 90	150 00	9 45	
Hankinson, R. J	Rocky Mt. House	—	60			72	33	42	17	920 38	420 00	14 39	
Ingraham, C. B	Saddle Lake	6 months.	34			13	26	2	9	330 60	150 00	2 97	Office closed.
Lacey, J. E	Salmon Arm	—	52			19	21	11		560 75	600 00		No expense charged.
McDonald, J. S	Sedgewick	—	75		5	92	46		25	1,494 40	300 00	18 19	
Gray, W. B	Stettler	—	32	2	7	114	39		73	1,918 59	1,200 00	23 18	Assistant 4 months.
Racicot, P	St. Paul des Metis	—	201			147	99	81	71	2,648 82	600 00	17 09	
Laplante, J. R	St. Lina	—	28			50	5	11	1	243 50	282 85	4 45	
Garrick, W. H. S	Trochu	—	6	1	1	29	31	3	1	335 20	300 00	4 51	
Wilson Frank	Vegreville	—	83			29	45	17	10	1,131 01	604 00	20 08	
Flood, A. J	Vulcan	—	4	1	2	104	13	2	8	286 60	300 00	5 58	
Mace, Job	Vermillion	—	68			124	64	9	34	872 48	720 00	19 61	
Spicer, F. P	Wetaskiwin	—	58			14	18	6	16	763 53	600 00	13 49	
McAlpine, C. D	Whitecourt	10 months	20			28	5	2	3	197 50	250 00	3 83	
McLeod, H. W	Wainwright	—	79	1		155	49		13	806 00	600 00	17 63	
Laight, G. C	Wabamun	—	33			52	16	2	11	440 80	300 00	10 44	
Hughson, W. S	Whitford	—	100			52	36	38		1,287 57	600 00	11 10	
Alton, B.C	Westlock	—	77			131	39	80	42	1,282 81	420 00	21 45	
Snell, F. E	Youngstown	—	87	15	40	560	203		87	3,254 50	480 00	53 38	
Wenham, M	Yeoford	—	6			40	3	20	12	219 85	300 00	6 40	
Totals		—	2,800	56	300	5,210	2,036	903	1,305	69,641 71	23,857 85	833 35	

C.—Statement Showing principal work performed by Homestead Inspector for Departmental Year ending March 31, 1916.

Name of Homestead Inspector.	Headquarters.	Period.	Land Inspections made.	Applications for patent taken.	Miles travelled.		Expenditure.		
					Wagon.	Rail.	Salary.	Trav. exps. for self and team.	
							$ cts.	$ cts.	
Benzie, J. M.	Kamloops, B.C.	—	371	17	3,539	2,415	1,200 00	1,267 20	
Blackwell, A. J.	Edmonton	—	181	24	5,900	4,311	1,300 00	1,218 40	
Bruce, A. S.	Calgary	7 months.	103	26	3,207	2,315	700 00	688 85	Resigned.
Creighton, H. E.	Red Deer	—	289	135	5,616	3,310	1,200 00	1,468 85	
Cunningham, T. J.	Edmonton	—	260	25	3,302	1,521	1,500 00	1,126 43	
Cook, H.	Revelstoke	—	166	.....	578	4,042	1,200 00	500 55	
Doze, I. S.	Edmonton	—	481	8	4,525	2,180	1,300 00	985 50	
Fletcher, Jos.	Grand Prairie	—	140	5	3,951	680	1,200 00	814 11	
Fleming, G. W.	Calgary	5 months.	208	11	2,142	1,813	500 00	530 99	
Grey, A.	Edmonton	—	441	19	5,604	2,257	1,300 00	1,263 45	
Grasse, P. L.	Red Deer	—	209	4	4,859	2,039	1,300 00	1,335 75	
Hagen, S. C.	Edmonton	—	502	36	4,833	1,751	1,300 00	1,064 20	
Huntley, J. R.	Medicine Hat	—	126	5	4,121	819	1,200 00	1,029 50	
Kembry, R. A.	Calgary	—	265	13	5,860	5,778	1,200 00	1,674 67	
Key, A. E.	Grouard	5 months.	51	11	574	444	500 00	148 20	
Magee, W. D.	New West'str.	—	197	.....	1,190	4,351	.....	505 25	Also agent.
McConnochie, A.	Edmonton	4 months.	29	4	657	476	433 32	286 65	Enlisted July, 1915.
McMullen, J. E.	Peace River C.	—	163	62	3,086	1,587	1,300 00	1,316 51	Transf'rd from Grouard.
McCowan, H. S.	Edmonton	7 months.	439	23	2,393	996	700 00	561 95	Apt. Sept., 1915.
Ripley, R.	Lethbridge	—	235	126	4,100	1,135	1,200 00	1,008 85	
Scott, H.	Lethbridge	—	150	108	3,483	1,161	1,300 00	926 45	
Switzer, W.	Medicine Hat	11 months	226	3	4,647	1,149	1,200 00	842 45	Enlisted Feb. 1916.
Tempany, Wm.	Calgary	—	248	14	5,844	1,465	1,300 00	1,392 10	
Woodlock, P. A.	Calgary	—	375	31	5,979	5,902	1,300 00	1,577 25	
Wynne, A. E.	Edmonton	—	342	22	4,570	2,039	1,300 00	1,137 41	
Totals		—	6,197	732	94,560	55,936	26,933 32	24,671 52	

No. 5.

REPORT OF AGENT OF DOMINION LANDS, BATTLEFORD, SASK.

Statement of work performed during the fiscal year ending March 31, 1916:—

	Number.	Revenue.	Total.
Patent Branch—			
Homestead entries	547	$ 5,450 00	
Pre-emption entries	36	350 00	
Purchased homestead entries	17	170 00	
Improvements	83	3,381 40	
Land sales	34	1,552 52	
Pre-emption payments	100	21,828 86	
Purchased homestead payments	119	14,606 35	
Searches	249	87 25	
Applications for patent	826	.....	
" cancellation	269	.....	
Entries cancelled	508	.....	
Sundries	5	107 71	
Townsite sales	1	2 00	
			$47,536 09
Timber and Grazing Branch—			
Timber permits, Dominion	372	$423 60	
" seizures, Dominion	48	219 32	
Hay permits, Dominion	62	188 30	
" seizures, Dominion	11	29 90	
Grazing rentals, Dominion	149	565 74	
			1,426 86
Forestry Branch—			
Timber permits	291	$292 25	
" seizures	17	23 75	
Grazing rental	28	263 60	
Hay dues	12	22 28	
			601 88
Mining Lands and Yukon Branch—			
Mining fees	2	$7 50	
			7 50
School Lands Branch—			
Timber permits	3	$ 8 75	
" seizures	1	5 00	
Hay permits	171	399 40	
" excess	10	9 10	
Grazing rentals	121	1,766 57	
			2,188 82
Miscellaneous—			
Sundry revenue	2	$ 20 00	
Seed grain and provision repayments	87	6,185 71	
			6,205 71
Grand total			$57,966 86
General—			
Letters received	31,386		
" written	31,712		
Number of staff and salaries	9	$ 9,809 84	
Disbursements	....	1,514 09	
Total		$11,323 93	

L. P. O. NOEL,
Agent of Dominion Lands.

No. 6.

REPORT OF THE AGENT OF DOMINION LANDS, BRANDON, MAN.

Statement of the business transacted during the fiscal year ending March 31, 1916:—

	Number.	Revenue.	Total.
Patent Branch—			
Homestead fees	86	$ 850 00	
Improvements	5	273 50	
Land sales—cash	11	1,426 30	
Searches, map sales, office fees, etc.	205	52 00	
Applications for patent received	15	.....	
" for inspections received	12	.....	
Entries cancelled	19	.....	
			$2,601 80
Timber and Grazing Branch—			
Hay permits	107	$209 30	
Grazing rentals—cash	5	23 50	
			232 80
Forestry Branch—			
Launch rentals	....	$ 249 75	
Permit fees and rental	22	95 75	
Timber dues	65	93 70	
Seizures	6	69 50	
Grazing rent, etc.	99	1,228 25	
Hay dues, etc.	145	252 30	
			1,989 25
School Lands Branch—			
General sales	5	$2,876 00	
Hay permits	93	170 50	
Grazing rentals	27	484 00	
			3,530 50
Grand total			$8,354 35
General—			
Letters received	4,475		
" written	5,047		
Number of staff and salaries	....	$2,697 50	
Disbursements	....	195 35	

L. J. CLEMENT,
Agent of Dominion Lands.

No. 7.

REPORT OF THE AGENT OF DOMINION LANDS, CALGARY, ALTA.

Statement showing the business transacted during the fiscal year ending March 31, 1916:—

	Number.	Revenue.	Total.
Patent Branch—			
Homestead fees	622	$ 6,840 00	
Pre-emption fees	232	2,310 00	
Purchased homesteads	23	230 00	
Improvements	248	12,659 56	
Land sales	31	4,479 89	
Pre-emption payments	499	97,346 40	
Purchased homestead payments	172	19,940 60	
Searches, etc.	562	140 50	
Applications for patent	1,697	.....	
" for cancellation	751	.....	
Entries cancelled	693	.....	
Seed grain payments	149	12,111 58	
			$156,058 53
Timber and Grazing Branch—			
Ground rent	35	$2,451 77	
Royalty on sales	35	9,166 00	
Timber permits	188	1,903 26	
" seizures	12	331 67	
Hay permits	36	51 80	
Grazing rentals, cash	260	3,812 79	
Sundries	1	20 53	
			17,737 82
Forestry Branch—			
Permit fees and rental	124	$6,744 83	
Seizures	10	98 94	
Grazing rent, etc.	34	1,195 74	
Hay dues, etc.	15	35 75	
			8,075 26
Irrigation Branch—			
Sales	16	$1,809 59	
			1,809 59
Mining Lands and Yukon Branch—			
Mining fees (quartz and placer)	97	$ 385 00	
Rental (coal)	105	9,821 71	
Royalty	68	7,160 03	
Petroleum and natural gas	123	1,122 72	
Coal permits	1	5 00	
Sundries	5	50 70	
			18,545 16
School Lands Branch—			
General sales	1	$ 272 88	
Hay permits	757	1,513 20	
Grazing rentals	421	7,454 78	
Petroleum and natural gas	6	10 75	
Coal rental	5	370 25	
			9,621 86
Grand total			$211,848 22
General—			
Letters received	100,228		
" written	67,596		

W. E. TALBOT,
Agent of Dominion Lands.

No. 8.

REPORT OF THE AGENT OF DOMINION LANDS, DAUPHIN, MAN.

Report for the fiscal year ending March 31, 1916:—

	Number.	Revenue.	Total.
Patent Branch—			
Homesteads	1,630	$16,330 00	
Improvements	105	2,567 25	
Land sales, cash	14	590 29	
Searches	301	75 25	
Applications for patents	314	.....	
" inspections	247	.....	
Entries cancelled	488	.....	
Sundries	1	2 50	
			$19,565 29
Timber and Grazing Crown Lands—			
Timber permits	239	$522 50	
" seizures	20	196 25	
Hay permits	419	878 30	
Grazing rentals	31	210 43	
			1,807 48
Forestry Branch—			
Timber permits	901	$5,234 86	
" rental fees	41	205 00	
" seizures	48	352 57	
Grazing rentals	27	158 75	
Hay dues, etc	216	481 60	
			6,432 78
Mining Lands and Yukon Branch—			
Mining fees	318	$1,590 00	
Rental	1	30 80	
Sundries	172	430 00	
			2,050 80
School Lands Branch—			
General sales	1	$172 80	
Timber permits	14	104 25	
" seizures	2	20 00	
Hay seizures	257	453 05	
Grazing rentals	44	667 06	
			1,417 16
Miscellaneous—			
Seed grain (paid)	6	$226 53	
			226 53
Grand total			$31,500 04
General—			
Letters received	35,695		
" written	26,269		
Staff and salaries	8	$8,580 00	
Disbursements	....	1,048 08	

E. WIDMEYER,
Agent of Dominion Lands.

No. 9.

REPORT OF THE AGENT OF DOMINION LANDS, EDMONTON, ALTA.

Statement of the business transacted during the fiscal year ending March 31, 1916:—

	Number.	Revenue.	Total.
Patent Branch—			
Homestead fees	3,199	$31,920 00	
Pre-emption fees	2	20 00	
Purchased homestead fees	1	10 00	
Improvements	462	10,720 39	
Land sales, cash	128	6,650 57	
Pre-emption payments	8	1,496 58	
Purchased homestead payments	35	4,118 56	
Searches	228	57 00	
Applications for patent recommended	2,053	.....	
" inspection received	1,210	.....	
Entries cancelled	2,029	.....	
Sundries	8	110 00	
			$55,103 10
Timber and Grazing Branch—			
Bonus	3	$ 5,155 80	
Ground rent	50	6,072 92	
Royalty on sales	63	22,722 12	
Timber permits	1,412	8,037 60	
" seizures	59	20,617 64	
Hay permits	570	797 20	
Grazing rentals, cash	57	209 95	
" scrip	....	184 78	
Sundries	587	36,383 09	
			100,181 10
Forestry Branch—			
Timber dues	4	$ 553 75	
Permit fees and rental	15	3 50	
Seizures	4	3,223 12	
Grazing rent, etc	8	84 67	
Hay dues	31	135 00	
			4,000 04
Mining Lands and Yukon Branch—			
Mining fees	144	$1,411 00	
Rental	20	1,335 81	
Royalty	37	8,262 59	
Assessment payments	10	1,400 00	
Coal permits	40	3,369 76	
Sundries	130	3,278 08	
			19,057 24
School Lands Branch—			
General sales	1	$ 62 75	
Timber permits	14	191 86	
Hay permits	517	876 77	
Grazing rentals	142	1,612 03	
Mining fees	1	25 60	
Coal rental	4	104 10	
Sundries	69	3,649 19	
			5,522 30
Miscellaneous—			
Seed grain and provision repayments	91	$3,139 06	
			3,139 06
Grand total	....	.....	$188,002 84
General—			
Letters received	72,249		
" written	100,248		
Number of staff and salaries	....	$27,564 56	
Disbursements	....	3,930 85	

A. NORQUAY,
Agent of Dominion Lands.

No. 10.

REPORT OF THE AGENT OF DOMINION LANDS, ESTEVAN, SASK.

Statement of work for the fiscal year ending March 31, 1916:—

	Number.	Revenue.	Total.
Patent Branch—			
Homestead fees	23	$230 00	
Improvements	5	275 00	
Land sales, cash, etc.	1	30 00	
Pre-emption payments	3	559 15	
Searches, maps, sales, etc.	41	10 25	
Applications for patent received	30		
" inspections received	13		
Entries cancelled	18		
			$1,104 40
Timber and Grazing Branch—			
Hay permits	14	$23 60	
Grazing rentals	19	96 55	
			120 15
Forestry Branch—			
Timber dues	15	$27 25	
Permit fees and rental	15	3 75	
Seizures	19	81 65	
Grazing rent	7	35 25	
Hay dues, etc.	20	51 10	
			199 00
Mining Lands and Yukon Branch—			
Mining fees	5	$ 25 00	
Rental	20	611 49	
Royalty	55	2,130 73	
			2,767 22
School Lands Branch—			
Hay permits	123	$196 35	
Grazing rentals	65	661 68	
Mining fees	1	5 00	
Coal rental	4	224 00	
" royalty	9	569 75	
Cultivation permit	1	40 00	
			1,696 78
Miscellaneous—			
Seed grain payments	3	$330 53	
			330 53
Grand total	....	.....	$6,218 08
General—			
Letters received	3,880		
" written	1,709		
Number of staff and salaries	3	$3,300 00	
Disbursements	....	191 08	

R. C. KISBEY,
Agent of Dominion Lands.

No. 11.

REPORT OF THE AGENT OF DOMINION LANDS, GRANDE PRAIRIE, ALTA.

Statement of the business transacted during the fiscal year ending the 31st March, 1916:—

	Number.	Amount.	Total.
Patent Branch—			
Homestead fees	863	$8,630 00	
Improvements	47	1,485 50	
Land sales	37	2,545 64	
Patent and interchange fees	3	20 00	
Searches	8	2 00	
Applications for patent	399	.....	
" inspection	132	.....	
Entries cancelled	238	.....	
			$12,683 14
Timber and Grazing Branch—			
Timber permits	318	$267 40	
" seizures	9	138 38	
Hay permits	143	296 10	
Grazing rentals	34	198 06	
Timber excess	32	117 08	
Hay excess	2	1 50	
			1,018 52
Mining Lands and Yukon Branch—			
Mining fees	9	$ 45 00	
Rentals	14	140 25	
Royalty	10	18 84	
Coal permits	3	37 50	
			241 59
School Lands Branch—			
Hay permits	23	$ 38 00	
Grazing rentals	21	333 69	
Hay excess	1	70	
			372 39
Miscellaneous—			
Seed grain and provision payments	2	$63 80	
			63 80
Grand total	....	.....	$14,379 44
General—			
Letters received	8,376		
" written	7,197		
Staff	3	3,714 47	
Disbursements	....	$1,010 00	

J. J. E. CLARKE,
Acting Agent of Dominion Lands.

No. 12.

REPORT OF THE AGENT OF DOMINION LANDS, GROUARD, ALTA.

I have the honour to inform you, in reference to my annual report for year ending March 31, 1916, on the 15th October, 1915, the Peace River District was divided, and Grouard remained the district office of the Grouard district, and Peace River Crossing sub-agency was created into a district office.

The department's decision to divide the territory under my charge into two districts was the means of withdrawing the major part of the revenue from this office, as nearly all the available prairie land was allotted to the new Peace River district.

The nature of the land in the present Grouard district is nearly all covered with unmerchantable timber. About one-third of our district is taken up with lakes, forest reserves, marsh land, and Indian reservations. The district, as it stands to-day, is not nearly so attractive to the prospective settler, and offers less inducements to the ordinary settler than some of the more fortunate districts, which have large areas of prairie land.

Unless something is done for the settler to make his duties lighter in settling the Grouard district, I fear it will be some time before our district is settled; notwithstanding the fact that we have better land in this district than any other portion in Alberta.

The people of the Grouard district have responded nobly to the call to arms, and notwithstanding the large exodus of the settlers to take part in the European war, we have over 50 per cent more land under cultivation than we had last year. The crops were excellent, the average production being oats 29, barley 27, and wheat 26 bushels to the acre. So that, on the whole, the district is blessed with a fair measure of prosperity.

The fur catch was large and the prices were exceptionally good. Many of our settlers living near lakes took out licenses to fish, which enabled them to face the long severe winter without hardship. This added greatly to the prosperity of the district.

Attached please find statement of revenue collected at the Grouard agency for the fiscal year ending 31st March, 1916:—

	Number.	Revenue.	Total.
Patent Branch—			
Homestead fees	367	$3,670 00	
Improvements	17	626 00	
Land sales (cash)	9	349 62	
Transfer fees	2	4 00	
Searches, etc	33	8 25	
Applications for patent	95	.....	
" inspection	156	.....	
Entries cancelled	209	.....	
			$4,657 87
Timber and Grazing Branch—			
Timber permits	221	$445 57	
" seizures	....	.....	
Hay permits	71	200 80	
Grazing rentals	6	66 60	
			712 97
Forestry Branch—			
Permit fees and rental	2	$2 79	
Hay dues	....	.....	
			2 79

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Mining Lands and Yukon Branch—			
Mining fees	25	$1,013 53	
Rental	1	40 00	
Coal permits	5	25 00	
Sundries (gravel)	4	75 38	
Power of attorney	3	6 00	
			$1,159 91
School Lands Branch—			
Hay permits	20	$37 90	
Grazing rentals	6	83 20	
Cultivation permits	....	.....	
			121 10
Grand total	....	.....	$6,654 64
Letters received	4,194		
" written	5,778		
Staff (two on active service)	5	$5,291 87	
Disbursements	....	1,401 81	
Total		$6,693 68	

W. F. W. CARSTAIRS,
Agent of Dominion Lands.

No. 13.

REPORT OF THE AGENT OF DOMINION LANDS, HUMBOLDT, SASK.

Statement of work for the year ending the March 31, 1916:—

Patent Branch—	Number.	Revenue.	Total.
Homesteads	546	$5,460 00	
Improvements	86	3,186 38	
Land sales	23	1,347 57	
Searches, etc	376	94 50	
Applications for patent	637	.....	
" inspection	276	.....	
Entries cancelled	411	.....	
			$10,088 45
Timber and Grazing Branch—			
Ground rent	1	$ 25 00	
Timber permits	101	35 25	
" seizures	16	279 73	
Hay permits	210	311 35	
Grazing rentals	53	203 02	
Timber excess dues	2	4 85	
Hay excess dues	8	4 80	
			864 00
School Lands Branch—			
Grazing rentals	261	$2,384 46	
Hay permits	345	632 85	
Timber seizures	2	8 50	
Hay excess dues	6	7 30	
			3,033 11
Miscellaneous—			
Seed grain payments	19	$1,049 25	
			1,049 25
General—			
Letters received	17,868		
" written	18,579		
Staff	7	$6,679 88	
Disbursements	....	718 29	

R. G. MACKEY,
Agent of Dominion Lands.

No. 14.

REPORT OF THE AGENT OF DOMINION LANDS, KAMLOOPS, B.C.

Statement showing the business transacted during the fiscal year ending March 31, 1916:—

	Number.	Revenue.	Total.
Patent Branch—			
Homesteads	236	$2,330 00	
Improvements	93	3,171 88	
Land sales	31	2,775 60	
Ground rent	1	31 78	
Searches	185	69 75	
Applications for patent	120	.....	
" inspection	85	.....	
Entries cancelled	75	.....	
			$8,379 01
Timber and Grazing Branch—			
Ground rent	70	$3,493 26	
Royalty	15	3,343 58	
Timber permits	381	1,306 00	
" seizures	15	237 27	
Hay permits	13	13 40	
Grazing rentals	359	6,849 92	
Registration fees	7	14 00	
Fire guarding	8	1,959 96	
			17,217 39
Forestry Branch—			
Permit fees	8	$120 20	
Rents	7	77 40	
Hay dues	7	14 75	
			212 35
Mining Lands Branch—			
Mining fees	4	$ 20 00	
Rental	14	491 35	
Permits	2	1 00	
			512 35
Miscellaneous—			
Seed grain	17	$272 35	
			272 35
Grand total	....	.....	$26,593 45
Letters received	11,809		
" written	10,276		

W. C. COWELL,
Agent of Dominion Lands.

No. 15.

REPORT OF THE AGENT OF DOMINION LANDS, LETHBRIDGE, ALTA.

Statement of work performed and revenue collected for the fiscal year ending March 31, 1916:—

	Number.	Revenue.	Total.
Patent Branch—			
Homestead fees	201	$ 2,010 00	
Pre-emption fees	39	390 00	
Purchased homestead fees	11	100 00	
Improvements	104	4,347 75	
Land sales, cash	19	1,489 79	
Pre-emption payments	238	53,928 84	
Purchased homestead payments	50	6,842 23	
Searches, map sales, office fees, etc	112	35 35	
Application for patent received	480	.....	
Applications for inspection received	277	.....	
Entries cancelled	226	.....	
Sundries	1	10 00	
			$69,153 96
Timber and Grazing Branch—			
Timber permits	62	$ 28 45	
Hay permits	4	2 30	
Grazing rentals, cash	189	2,101 82	
			2,132 57
Forestry Branch—			
Permit fees and rental	164	$ 419 85	
Grazing rent	54	1,475 32	
Hay dues	28	29 15	
			1,924 32
Irrigation Branch—			
Sales	5	$708 11	
			708 11
Mining Lands and Yukon Branch—			
Mining fees	144	$ 992 50	
Rental	205	11,795 36	
Royalty	51	3,182 22	
Sundries	81	177 50	
			16,147 58
School Lands Branch—			
General sales	1	$ 300 00	
Hay permits	57	56 50	
Grazing rentals	140	2,262 02	
Mining fees	11	55 00	
Petroleum, gas and coal rental	19	1,371 41	
Sundries	5	10 00	
			4,054 93
Miscellaneous—			
Seed grain and provision payments	144	$13,871 52	13,871 52
Grand total	....	.....	$107,992 99
General—			
Letters received	41,155		
" written	37,171		
Number of staff and salaries	6	$6,023 73	
Disbursements	100	1,678 50	
Total		$7,702 23	

J. A. REID,
Agent of Dominion Lands

No. 16.

REPORT OF THE AGENT OF DOMINION LANDS, MAPLE CREEK, SASK.

I have the honour to submit herewith, the annual statement of receipts and work performed in this agency during the fiscal year which expired on March 31, 1916:—

You will notice that there is a falling-off in entries granted, and this is due to the fact that practically all the desirable agricultural land in this district has been taken up, and practically all lands being entered on now are secured through cancellation. During the year just closed we received no less than seven hundred applications of this nature, notwithstanding the fact that certain periods of protection were granted during the winter months.

The year just closed was the most prosperous I have seen since I have been agent of Dominion Lands at this point, and you will see by the amount of revenue collected on account of pre-emptions and purchased homesteads that the settlers have been meeting their obligations fairly well.

During the year we accepted and approved 1,652 applications for patent, a considerable number of which were for pre-emptions; some of the pre-emptors taking advantage of the three years' clause in the regulations allowing them to apply for patent, providing they pay the purchase price in full and have their cultivation duties completed.

The receipts in connection with the Mining Lands and Yukon Branch showed a very marked decrease as compared with the previous year, due to the fact that on account of the hard times no one appeared to be anxious to invest his money in oil and gas leases.

The registration of seed grain, fodder and relief liens was a large proposition, but by working my staff overtime I managed to get the work done without securing any extra assistance, and they deserve commendation for their efforts in keeping up the work.

In conclusion, I would say that the prospects of a good crop this year are bright although there will be a decrease in the area seeded.

Patent Branch—	Number.	Amount.	Total.
Homestead fees	749	$ 7,490 00	
Pre-emption fees	558	5,580 00	
Purchased homestead fees	46	460 00	
Improvements	192	8,871 55	
Land sales, cash	14	1,352 84	
Pre-emption payments	359	94,949 34	
Purchased homestead payments	161	19,738 74	
Searches, map sales, office fees, etc.	1,628	407 00	
Applications for patent	1,652	.....	
" inspection	700	.....	
Entries cancelled	509	.....	
			$138,849 47
Timber and Grazing Branch—			
Bonus, excess hay	11	$ 5 55	
Ground rent, improvements	6	1 10	
Timber permits	284	71 00	
" excess	10	9 00	
Hay permits	338	397 90	
Grazing rentals, cash	987	14,832 83	
" tenders hay	2	13 00	
Timber dues	....	5 75	
			15,445 03

Forestry Branch—			
Timber dues	....	$347 75	
Permit fees and rental	263	65 75	
Seizures	1	2 50	
Hay dues	39	139 55	
			$555 55
Irrigation Branch—			
Sales	27	$5,325 60	
			5,325 60
Mining Lands and Yukon Branch—			
Mining fees	6	$ 30 00	
Rental	18	319 69	
Royalty	16	59 87	
Coal permits	1	10 04	
			419 60
School Lands Branch—			
Hay permits	447	$ 493 83	
Grazing rentals	238	4,771 52	
Cultivation permits—Tenders for hay	2	80	
Sundries, excess hay	8	9 55	
			5,275 70
Miscellaneous—			
Seed grain and provision repayments	368	$27,881 55	
Sundries	....	50 00	
			27,931 55
Grand total	....	.....	$193,802 50
General—			
Letters received	55,251		
" written	47,833		
Number of staff and salaries	....	$12,139 92	
Disbursements	....	1,490 55	
Total		$13,630 47	

C. H. STOCKDALE,
Agent of Dominion Lands.

No. 17.

REPORT OF THE AGENT OF DOMINION LANDS, MEDICINE HAT, ALTA.

Statement of the business transacted during the fiscal year ending March 31, 1916:—

Patent Branch—	Number.	Amount.	Total.
Homestead fees	398	$ 3,980 00	
Pre-emption fees	245	2,450 00	
Purchased homestead fees	39	390 00	
Improvements	136	5,971 05	
Land sales, cash	7	397 01	
Pre-emption payments	227	59,197 70	
Purchased homestead payments	110	11,748 97	
Searches, map sales, office fees, etc	279	69 75	
Applications for patent received	1,316	.....	
" inspection received	582	.....	
Entries cancelled	561	.....	
			$84,204 48

Timber and Grazing Branch—			
Timber permits	32	$ 15 25	
Hay permits	222	192 10	
Grazing rentals, cash	837	26,696 57	
" scrip	3	160 00	
			$27,063 92
Forestry Branch—			
Timber dues	121	$247 20	
Permit fees and rental	298	74 50	
Seizures	1	34 00	
Elkwater Lake summer resort	4	20 00	
Hay dues	64	167 00	
			542 70
Irrigation Branch—			
Sales	33	$7,214 61	
			7,214 61
Mining Lands and Yukon Branch—			
Mining fees	38	$ 190 00	
Placer mining, rental	19	368 25	
Royalty	37	230 90	
Quartz mining, quarries, assignment fees, coal permits	44	88 00	
Petroleum and natural gas	178	9,356 56	
			10,233 71
School Lands Branch—			
General sales	10	$1,229 00	
Petroleum and natural gas	10	516 50	
Hay permits	133	171 65	
Grazing rentals	128	2,632 64	
Mining fees	5	25 00	
			4,574 79
Miscellaneous—			
Seed grain and provision repayments	504	$25,383 64	
			25,383 64
Grand total	....	.....	$159,217 85
General—			
Letters received	23,661		
" written	24,735		
Number of staff and salaries	....	$11,264 68	
Disbursements	....	1,121 95	

GEO. H. MACDONELL,
Agent of Dominion Lands.

No. 18.

REPORT OF THE AGENT OF DOMINION LANDS, MOOSEJAW, SASK.

Statement of the business transacted during the fiscal year ending March 31, 1916:—

Patent Branch—	Number.	Amount.	Total.
Homestead fees	708	$ 7,080 00	
Pre-emption fees	362	3,620 00	
Purchased homestead fees	38	380 00	
Improvements	106	7,270 45	
Land sales, cash	25	1,504 58	
Pre-emption payments	523	139,524 08	
Purchased homestead payments	138	18,039 70	
Searches, map sales, office fees, etc	1,921	480 25	
Applications for patent received	1,980	.....	
" inspection received	906	.....	
Entries cancelled	1,104	.....	
			$177,899 06

Timber and Grazing Branch—			
Timber permits	22	$ 5 50	
Hay permits	40	57 85	
Grazing rentals, cash	601	3,225 97	
			$3,289 32
Forestry Branch—			
Timber dues	29	$ 7 25	
Permit fees and rental	48	11 50	
Seizures	1	8 00	
Grazing rent, etc	178	449 38	
Hay dues, etc	50	108 55	
			584 68
Mining Lands and Yukon Branch—			
Mining fees	19	$ 95 00	
Rental	17	500 25	
Royalty	25	182 43	
			777 68
School Lands Branch—			
General sales	....	$ 837 00	
Hay permits and excess on one permit	751	1,230 70	
Grazing rentals	305	3,779 71	
Mining fees	2	10 00	
Coal rental	1	40 00	
" permit	1	5 00	
			5,902 41
Miscellaneous—			
Sundries	....	$25,330 14	
			25,330 14
Grand total			$213,783 29
General—			
Number of staff and salaries	....	$12,689 86	
Disbursements	....	2,079 59	
Letters received	60,181		
" written	46,983		

G. K. SMITH,
Agent of Dominion Lands.

No. 19.

REPORT OF THE AGENT OF DOMINION LANDS, NEW WESTMINSTER, B.C.

Work performed and revenue collected for the fiscal year ending March 31, 1916:—

Patent Branch—	Number.	Amount.	Total.
Homestead fees	122	$1,220 00	
Improvements	10	267 00	
Land sales	6	249 10	
Townsite sales	7	150 98	
Purchased homesteads	60	1,217 88	
Searches, etc	2	1 20	
Applications for patent	25	.....	
" inspection	51	.....	
Entries cancelled	79	.....	
Patent fees	2	20 00	
			$3,126 16
Mining Lands and Yukon Branch—			
Mining fees	39	$ 195 00	
Rental	66	2,409 76	
Assignment fees	13	26 00	
			2,630 76
Grand total			$5,756 92
Letters received	2,236		
" written	2,089		

W. D. MAGEE,
Agent of Dominion Lands.

No. 20.

REPORT OF THE AGENT OF DOMINION LANDS, PEACE RIVER CROSSING, ALTA.

This office was opened on the 15th October, 1915, with a competent staff. The opening of this office has been a great convenience to the numerous settlers desiring to settle in the Peace River country, and there has been a steady influx of homesteaders, many of them with their wives and families, and with considerable stock and household effects.

Already many applications for patent have been received.

With the railway at the town of Peace River, and the consequent opportunity to market grain, a great increase in the number of settlers is confidently expected.

The large number of inquiries received by this office regarding the land and the requirements of incomers, also confirms this view. In addition to opening of transportation, oil drilling operations have been commenced on an extensive scale by the Peace River Oil Company and the D. A. Thomas Company to the north. This will tend to further immigration and furnish the farmers with an increased market for garden and poultry products.

That the prospective settler will have an ample choice of land is assured by the opening for homestead entry of thirty-nine townships since January 21, 1916. These are scattered all the way from Hudson's Hope on the west to Fort Vermilion on the north, and offer a wide choice of location.

To accommodate the settlers in the western portion of the district a sub-agency is now being opened at Fort St. John. This will be a convenience that will be greatly appreciated by the settlers in that locality.

During the past year there was an excellent yield of grain all through the Peace River country, and now that the farmer is assured of his market, the acreage in grain will be greatly increased.

Following is a synopsis of business transacted since the installation of this office:—

	Number.	Revenue.	Total.
Patent Branch—			
Homestead entries	226	$2,260 00	
Improvements	9	1,065 00	
Land sales	13	769 86	
Searches	6	1 50	
Applications for patent	51	.....	
" inspection	23	.....	
Entries cancelled	45	.....	
			$4,096 36
Mining Lands and Yukon Branch—			
Petroleum and natural gas	11	$559 08	
Gravel	8	187 10	
			746 18
School Lands Branch—			
Grazing leases	11	$175 33	
			$175 33
Timber and Grazing Crown Lands—			
Timber permits	388	$886 26	
" seizures	1	51 25	
Grazing leases	5	9 60	
			947 11

Timber Permits Issued—
1,920,060 board measure.
84,889 lineal feet.
575,525 rails (fence).
102,009 roof poles.
19,159 fence posts.
3,187 wood.

Grand total	$5,964 94

General—		
Letters received	2,354	
" written	2,332	
Number of staff	5	
Salaries	....	$2,805 00
Disbursements	....	778 24
Total		$3,583 24

J. E. CARSON,
Agent of Dominion Lands.

No. 21.

REPORT OF THE AGENT OF DOMINION LANDS, PRINCE ALBERT, SASK.

My annual report for the fiscal year ending March 31, 1916, shows very gratifying results, notwithstanding the strenuous times through which we are passing. The total revenue is $14,000 in excess of last year. Over five hundred of our homesteaders and several hundred others have enlisted for active service, and although their withdrawal from peaceful pursuits is greatly felt, the district is showing many signs of progress and prosperity. The homestead entries have kept pace with those of last year, and applications for grazing permits and grazing leases have greatly increased. It is noticeable that a splendid class of settlers, many of them with considerable capital, is coming into the district, engaging in stock-raising and mixed farming, for which this northern country is admirably adapted.

Many settlements are showing large areas of splendid land being rapidly brought under cultivation, and as building timber is plentiful and easily obtained, the homesteader is enabled to erect substantial buildings with a very little outlay of money.

There are approximately ten thousand homesteads in this district available for entry at the present time, besides large areas of unsurveyed lands in close proximity, suitable for agricultural and grazing purposes.

Full information concerning the district has been given to numerous inquirers from Canada and the United States.

The following is a statement of the business transacted during the fiscal year ending 31st March last:—

Patent Branch—	Number.	Amount.	Total.
Homestead fees	1,227	$12,270 00	
Pre-emption fees	1	10 00	
Purchased homestead fees	11	478 50	
Improvements	89	1,492 65	
Land sales, cash	54	2,994 66	
" scrip	2	34 80	
Pre-emption payments	6	312 65	
Purchased homestead payments	11	642 73	
Searches, map sales, office fees	206	51 50	
Applications for patent received	794	.....	
" inspection received	429	.....	
Entries cancelled	558	.....	
			$18,287 49

Timber and Grazing Branch—			
Bonus	4	$ 3,513 43	
Ground rent	13	5,267 16	
Royalty on sales	21	37,898 70	
Timber permits	644	7,771 42	
" seizures	43	12,489 92	
Hay permits	363	606 35	
Grazing rentals, cash	127	421 63	
Sundries, fire tax	....	522 17	
			$68,490 78
Forestry Branch—			
Permit fees and rental	417	$1,418 85	
Seizures	10	826 78	
Grazing rent, etc	12	58 75	
Hay dues, etc	57	198 55	
			2,502 93
Mining Lands and Yukon Branch—			
Mining fees	226	$895 00	
Rental	2	50 00	
			945 00
School Lands Branch—			
Timber permits	20	$ 172 05	
Hay permits	349	598 15	
Grazing rentals	89	1,008 08	
Cultivation permits	1	76 50	
Sundries	1	25 00	
			1,879 78
Miscellaneous—			
Seed grain and provision repayments	74	$2,494 82	
			2,494 82
Grand total			$94,600 80

General—		
Letters received	34,051	
" written	35,889	
Number of staff and salaries	....	$18,039 65
Disbursements	....	1,224 61
Total		$19,264 26

D. J. ROSE,

Agent of Dominion Lands.

No. 22.

REPORT OF THE AGENT OF DOMINION LANDS, RED DEER, ALTA.

Statement of the business transacted during the fiscal year ending the 31st March, 1916:—

	Number.	Amount.	Total.
Patent Branch—			
Homestead fees	431	$ 4,310 00	
Pre-emption fees	61	600 00	
Purchased homestead fees	19	170 00	
Improvements payments	96	3,976 95	
Land sales	15	548 87	
Pre-emption payments	40	573 15	
" interest	65	14,881 19	
Purchased homestead payments	199	17,774 47	
Searches	202	50 50	
			$42,885 13
Timber, Grazing and Irrigation—			
Timber permits	141	$1,361 32	
" seizures	8	470 15	
Hay permits	100	301 30	
Grazing rental	98	291 54	
Hay excess	6	5 30	
Timber excess	20	64 02	
Hay leases	1	10 00	
			2,503 63
Forestry Branch—			
Timber permits	31	$36 50	
Grazing rental	1	12 75	
			49 25
Mining Lands and Yukon Branch—			
Mining fees	14	$ 70 00	
" rental	24	1,716 55	
" royalty	72	1,302 02	
Assignment fees	44	84 00	
Coal permits	9	15 00	
Sundries	33	143 63	
			3,331 20
School Lands Branch—			
General sales	1	$ 57 65	
Timber permits	3	7 75	
Hay permits	461	1,061 30	
Grazing permits	203	2,826 30	
Mining fees	1	5 00	
Coal rental	5	98 70	
" royalty	5	45 65	
Hay excess	7	6 50	
Assignments	2	4 00	
Sundries	1	50	
			4,113 35
Miscellaneous—			
Seed grain payments	16	$717 86	
			717 86
Grand total	....	.....	$53,600 42
General—			
Letters received	25,155		
" written	19,928		
Applications for patent	440		
" inspection	389		
Entries cancelled	349		
Disbursements	....	$1,085 20	

P. PIDGEON,
Agent.

No. 23.

REPORT OF ACTING AGENT OF DOMINION LANDS, REGINA, SASK.

	Number.	Amount.	Total.
Patent Branch—			
Homestead fees	85	$ 850 00	
Improvements	25	1,255 00	
Land sales, cash	4	300 00	
Purchased homestead payments	3	649 12	
Searches	162	40 50	
Applications for patent received	156	.....	
" inspection received	64	.....	
Entries cancelled	66	.....	
			$3,094 62
Timber and Grazing Lands Branch—			
Hay permits	4	$16 00	
Grazing rentals	5	5 32	
			21 32
Forestry Branch—			
Timber dues	23	$ 59 50	
Permit fees and rentals	57	144 50	
Lot rentals	3	15 00	
Seizures	22	71 30	
Grazing rent, etc	28	196 00	
Hay dues, etc	32	134 50	
			620 80
School Lands Branch—			
General sales	3	$2,634 67	
Timber permits	4	10 00	
" seizures	4	18 75	
Hay permits	408	1,113 10	
Grazing rentals	346	3,202 58	
Cultivation permits	1	2 50	
Sundries	....	26 60	
			7,008 20
Miscellaneous—			
Seed grain and provision payments	5	$351 50	
			351 50
Grand total	....	.....	$11,096 44
Letters received	8,018		
" written	8,361		
Number of staff	4		

C. HARRIS,
Acting Agent of Dominion Lands.

No. 24.

REPORT OF THE AGENT OF DOMINION LANDS, REVELSTOKE, B.C.

Statement of work for the fiscal year ending the 31st March, 1916:—

Patent Branch—	Number.	Amount.	Total.
Homestead fees	54	$ 540 00	
Purchased homestead fees	1	10 00	
Improvements	28	2,347 95	
Land sales	2	56 37	
Townsite payments	23	1,189 23	
Purchased homestead payments	10	300 50	
Searches, map sales, etc.	35	11 75	
Sundries	2	20 00	
Applications for patent	16	.....	
" inspection	17	.....	
Entries cancelled	42	.....	
			$ 4,475 80
Timber and Grazing Lands Branch—			
Ground rents	97	$ 4,130 96	
Royalties	11	11,436 37	
Timber permits	66	109 72	
" seizures	4	191 45	
Grazing rental	1	3 20	
Fireguarding	30	4,481 13	
Sundries	10	182 80	
			20,535 63
Mining Lands and Yukon Branch—			
Rentals	1	$40 00	
			40 00
Total receipts	....	.....	$25,051 43
Letters received	9,456		
" written	9,626		

T. J. WADMAN,
Agent of Dominion Lands.

No. 25.

REPORT OF THE AGENT OF DOMINION LANDS, SASKATOON, SASK.

Statement of work performed and revenue collected during the fiscal year ending the 31st March, 1916:—

	Number.	Revenue.	Total.
Patent Branch—			
Homesteads	440	$ 4,390 00	
Pre-emptions	121	1,210 00	
Purchased homesteads	54	540 00	
Improvements	150	9,192 97	
Land sales, cash	47	4,338 04	
Pre-emption payments	282	74,679 12	
Purchased homestead payments	386	46,775 60	
Searches	1,138	283 00	
Applications for patent received	1,719	.....	
" inspection received	465	.....	
Entries cancelled	445	.....	
Sundries	1	2 00	
			141,410 73
Timber and Grazing Branch—			
Timber permits	15	$ 10 75	
Hay permits	101	274 60	
Grazing rentals	50	137 04	
Excess wood	2	2 75	
" hay	1	50	
			425 64
Forestry Branch—			
Timber dues	2	$ 1 25	
Permit fees and rental	93	53 58	
Grazing rent	10	167 45	
Hay dues	10	17 65	
			239 93
Mining Lands and Yukon Branch—			
Mining fees	26	$130 00	
Petroleum and natural gas	4	164 50	
Sundries	9	18 00	
			312 50
School Lands Branch—			
General sales	3	$1,208 80	
Hay permits	551	1,180 25	
Grazing rentals	191	1,881 36	
Cultivation permits	6	32 75	
Excess hay	17	18 20	
			4,321 36
Miscellaneous—			
Seed grain and provision payments	286	21,502 13	
			21,502 13
Grand total	....	.....	$168,212 29
Letters received	44,039		
" written	32,591		

A. S. NEWCOMBE,
Acting Agent of Dominion Lands.

No. 26.

REPORT OF THE AGENT OF DOMINION LANDS, SWIFT CURRENT, SASK.

Statement of the business transacted during the fiscal year ending the 31st March, 1916:—

	Number.	Amount.	Total.
Patent Branch—			
Homestead fees	763	$ 7,630 00	
Pre-emption fees	487	4,870 00	
Purchased homestead fees	40	400 00	
Improvements	226	8,781 90	
Land sales, cash	34	4,616 63	
Pre-emption payments	464	130,855 40	
Purchased homestead payments	149	18,942 41	
Searches, map sales, office fees, etc.	1,516	379 00	
Applications for patent received	3,200	.....	
" inspection received	593	.....	
Entries cancelled	1,531	.....	
			$176,475 34
Timber and Grazing Lands Branch—			
Timber permits	41	$ 10 25	
Hay permits	131	217 20	
" overcut	1	20	
Grazing rentals, cash	273	5,925 91	
Sundries	3	134 00	
			6,287 56
Forestry Branch—			
Permit fees and rental	1	$ 25	
Grazing rent, etc.	7	27 85	
Hay dues, etc.	15	28 95	
			57 05
Irrigation Branch—			
Sales	4	$486 70	
			486 70
Mining Lands and Yukon Branch—			
Mining fees	4	$20 00	
Rental	2	40 50	
Royalty	8	24 45	
Coal permits, free	2	.....	
			84 95
School Lands Branch—			
Hay permits	543	$ 768 15	
" overcut	10	8 10	
Grazing rentals	394	5,799 46	
Coal royalty	1	3 70	
			6,579 41
Miscellaneous—			
Seed grain and provision repayments	480	$56,094 93	
			56,094 93
Grand total	....	.....	$246,065 94
General—			
Letters received	38,157		
" written	40,938		
Number of staff and salaries	16	$15,665 24	
Disbursements	....	2,825 00	

F. G. FORSTER,
Agent.

No. 27.

REPORT OF THE AGENT OF DOMINION LANDS, WEYBURN, SASK.

We beg to report a slight increase in the Dominion lands revenue of about $7,182.39, and a decrease in the Mining Lands and Yukon Department of $4,441.59, leaving a total increase of about $2,740.80.

The patriotic response of the homesteaders has been excellent, both in men and money. There has been an improvement in financial conditions, due to good crops, and better prices, which resulted in an increase of our revenue towards the end of our year, as you can see by the enclosed comparative statement. There are really no outstanding features, other than the exceptionally heavy snows this winter. On this date we have from three to four feet of snow on the stubble, whilst last year the seed drills started on the 6th April; however, according to all indications there will be no seeding done in this district until the 1st or possibly the 10th of May, which will make a late season, and a tendency for the crops to be caught by the early frost in the fall; otherwise the abundance of snow should assure a bumper crop.

The following is a statement of the business transacted and revenue collected during the fiscal year ending the 31st March, 1916:—

	Number.	Amount.	Total.
Patent Branch—			
Homestead fees	309	$ 3,090 00	
Pre-emption fees	118	1,180 00	
Purchased homestead fees	9	90 00	
Improvements	72	5,354 50	
Land sales, cash	3	544 65	
Pre-emption payments	176	42,980 19	
Purchased homestead payments	54	8,467 58	
Searches, map sales, office fees, etc	680	170 00	
Applications for patent received	465	.....	
" inspection received	219	.....	
Entries cancelled	268	.....	
			$61,876 92
Timber and Grazing Branch—			
Timber permits	2	$ 50	
" seizures	1	48 00	
Hay permits and excess	73	178 20	
Grazing rentals, cash	57	400 18	
			626 88
Mining Lands and Yukon Branch—			
Mining fees, stone and sand	1	$20 00	
Royalty	7	30 83	
Coal permits, registration of	2	10 00	
Sundries, assignment	1	2 00	
			62 83
School Lands Branch—			
Hay permits and excess	312	$ 718 15	
Grazing rentals	123	1,478 56	
Coal rental	2	30 00	
" royalty	2	142 07	
" permits	2	10 00	
			2,378 78
Miscellaneous—			
Seed grain and provision repayments	12	$1,823 16	
			1,823 16
Grand total	....	.....	$66,768 57
General—			
Letters received	12,681		
" written	8,355		
Number of staff and salaries	5	$5,079 69	
Disbursements	....	469 20	

S. C. MURRAY,
Agent of Dominion Lands.

No. 28.

REPORT OF AGENT OF DOMINION LANDS, WINNIPEG, MAN.

The following summary shows the amount of revenue collected and work performed during the fiscal year ending March 31, 1916:—

	Number.	Revenue.	Total.
Patent Branch—			
Homestead entries	2,238	$22,380 00	
Improvements	227	8,065 21	
Land sales, cash	43	3,106 69	
Searches, maps, etc.	271	141 60	
Seed grain	38	1,026 69	
			$34,720 19
Timber and Grazing Lands Branch—			
Grazing rentals	58	$401 39	
			401 39
Mines Branch—			
Mining fees	1,084	$4,347 00	
Rentals	43	1,757 89	
Quarries	5	57 00	
Assessment payments	1	100 00	
Petroleum and gas	11	55 00	
			6,316 89
School Lands Branch—			
Sales	11	$1,394 81	
Grazing rentals	40	483 30	
			1,878 11
Grand total	....	.....	$43,316 58
General—			
Applications for patent received	360		
" inspection	690		
Entries cancelled	1,036		
Letters received	28,408		
" written	34,594		

L. RANKIN,
Agent of Dominion Lands.

No. 29.

REPORT OF THE AGENT OF DOMINION LANDS, YORKTON, SASK.

Statement of work performed and revenue collected during the fiscal year ending March 31, 1916:—

	Number.	Revenue.	Total.
Patent Branch—			
Homestead entries	664	$6,640 00	
Improvements	62	2,334 50	
Land sales	14	794 14	
Searches	134	51 25	
Timber and Grazing Branch—			
Timber permits	101	$196 86	
" seizures	1	28 00	
Hay permits	74	161 30	
Grazing rentals	6	47 00	
Forestry Branch—			
Timber permits and dues	327	$410 91	
" seizures	8	81 45	
Grazing rentals	10	154 55	
Hay dues	77	265 40	
School Lands Branch—			
General sales	14	$6,724 79	
Hay permits	237	465 30	
Grazing rental	78	738 09	
Miscellaneous—			
Seed grain and provision repayments	18	$1,118 78	
Applications for patent	501	.....	
" inspection	330	.....	
Entries cancelled	302	.....	
Grand total	....		$20,212 32

Letters received	13,922
" sent	15,471

J. H. DUNCAN,
Agent of Dominion Lands.

No. 30.

REPORT OF THE MINING LANDS AND YUKON BRANCH.

This is a report of the Mining Lands and Yukon Branch of the Department of Interior for the fiscal year which ended on the 31st of March, 1916.

The total revenue of this branch, derived from all sources during the fiscal year, amounts to $486,971.07. Owing to the conditions resulting from the war extensions of time have been granted in a great many cases within which to pay the rental of mining locations held under lease.

The statements lettered "A" and "B," showing in different forms how the revenue is made up, will be found at the end of this report. The statement lettered "A" shows the total revenue for each month, and the statement lettered "B" shows the revenue collected at each agency, including the Yukon Territory.

The revenue for the Yukon Territory for the year amounts to $191,046.43.

The reports and statements for the fiscal year from the Administrator, Gold Commissioner, Assistant Gold Commissioner, Crown Timber and Land Agent, Comptroller, Director of Surveys, and the Territorial Assayer will be found under this part of the report.

TIMBER IN THE YUKON TERRITORY.

The total amount of dues collected on account of timber in the Yukon Territory during the fiscal year was $11,562.83. During the year 122 permits were issued, under the authority of which 1,530,000 feet board measure of timber and 12,407 cords of wood were authorized to be cut. The dues collected on permits issued amounted to $7,375.85.

There are in existence ninety-three timber berths held under license to cut timber within the Territory, covering an area of 185·61 square miles, which licenses were granted prior to the 10th of May, 1906, on which date the regulations governing the granting of licenses to cut such timber in the territory were rescinded, and regulations for the issue of permits to cut timber substituted therefor. Three saw-mills are now in operation within the territory.

According to returns received in the department, the number of feet (board measure) of lumber manufactured under license during the year, and sold, was 75,810. Seizure dues amounting to $976.33 were collected on 1,379·5 cords of wood, 3,678 feet board measure of timber, and 2,000 lineal feet of building logs cut in trespass. This does not include the very large amount of timber and cordwood cut free of dues for mining purposes.

MINING LANDS OTHER THAN COAL.

During the fiscal year 1,273 entries for quartz mining claims and fifty-one entries for placer mining claims were granted by the Agents of Dominion Lands in Manitoba, Saskatchewan, and Alberta.

According to the returns received during the fiscal year, 636 entries for placer mining claims, 188 entries for quartz mining claims, and 4,279 renewals and relocations were recorded during that period. The revenue collected from these sources and from fees for registering documents in connection with mining operations was $66,658.65.

ROYALTY ON GOLD MINED IN THE YUKON TERRITORY.

The total amount collected up to the 31st of March, 1916, for royalty on the gross output of placer mining claims in the Yukon Territory, after deducting the exemption at one time allowed under the regulations was $4,483,962.17, of which amount $111,457.19 was collected during the last fiscal year. For the purpose of estimating this royalty, the gold is valued at $15 an ounce, which is much below its real value.

The actual value of gold produced from placer mining operations in the Yukon Territory up to the 31st of March last might be safely placed at $143,317,917.

The following statement shows the agencies at which the royalty was collected and the amount collected at each during the year:—

Dawson	$110,965 42
Whitehorse	491 77

The statement lettered "D" at the end of this report shows the total gold production, the total production subject to royalty, and total royalty collected for each fiscal year from the 1st of May, 1898, to the 31st of March, 1916.

DREDGING.

Twenty-four leases to dredge for minerals in the beds of rivers in the Yukon Territory are now in force, covering a total frontage of 146·75 miles. The total revenue derived from this source up to the 31st of March, 1916, amounts to $196,241.31, of which amount $770.65 was collected during the fiscal year just closed.

These dredging leases are confined to the Yukon, McQueston, Forty-mile, Big Salmon, Klondike, and Sixty-mile rivers.

There are in operation in the Yukon Territory twelve dredges. Most of these dredges are working on the Klondike river and tributaries, and are operated by hydro-electric motive power. Two of the largest gold-saving dredges in the world are now being operated most successfully on the Klondike river-flat.

Eight leases to dredge for minerals in the submerged beds of rivers in the provinces of Alberta and Saskatchewan are now in force, covering a total frontage of 40 miles. Of these leases, four are in the province of Alberta and include 20 miles, and four are in the province of Saskatchewan and include 20 miles. The total revenue derived from this source up to the 31st of March, 1916, amounts to $45,833.20, of which amount $742.50 was collected during the past fiscal year.

HYDRAULIC MINING.

The hydraulic mining regulations relating to the Yukon Territory were rescinded by an Order in Council dated the 2nd of February, 1904, but leases already granted were not affected by such withdrawal.

There are still in force in the Yukon Territory nine hydraulic mining leases, covering an area of 24·73 square miles. Since the hydraulic mining regulations

were first established in December, 1898, forty-seven hydraulic mining leases have been issued, all of which have now been cancelled with the exception of the above number. It is considered that, under the grouping provisions of the Yukon Placer Mining Act, operators can now acquire and group for operation a sufficient area to warrant the installation of efficient hydraulic mining plants.

HOMESTEADS IN YUKON TERRITORY.

Eighty-two homestead entries in the Yukon Territory have been granted, of which sixty-six are now in force, comprising a total area of 9,968·45 acres. Patents have been issued for five homesteads.

PETROLEUM AND NATURAL GAS.

There are now in force under the regulations 10,568 petroleum and natural gas leases, embracing a total area of 4,278,480 acres, distributed as follows: In the province of Alberta, 9,817 leases, comprising 3,926,255 acres; in the province of Saskatchewan, 381 leases, comprising 226,153 acres; in the Railway Belt of the province of British Columbia, 309 leases, comprising 97,585 acres; in the province of Manitoba, 45 leases, comprising 4,167 acres; and in the Northwest Territories, 16 leases, comprising 24,320 acres. The total revenue derived from petroleum lands during the year amounts to $94,156.08.

Natural gas has been discovered and is now being utilized for commercial and domestic purposes in different parts of the province of Alberta; and petroleum, in what would appear to be paying quantity, has been discovered in the western part of that province. Boring operations are being carried on throughout Alberta and Saskatchewan with a view to the further discovery of petroleum and natural gas.

QUARRYING.

The number of leases now in force, issued under the provisions of the regulations, is 379, distributed as follows: In Manitoba, 107 leases, containing an arear of 3,321 acres; in Saskatchewan, 41 leases, containing an area of 2,315 acres; in Alberta, 168 leases, containing an area of 6,403 acres; and in British Columbia, 63 leases, containing an area of 1,895 acres.

The total revenue collected during the fiscal year on account of quarrying leases, including the application fees, amounts to $9,296.87.

WATER-RIGHTS.

There are now in force in the Yukon Territory 463 grants to divert water for mining purposes, aggregating a total of 107,120 miner's inches. During the last fiscal year ten water-rights were issued, comprising 1,300 miner's inches.

Grants are issued by this department authorizing the diversion of water in the Yukon Territory for power purposes. Up to date, thirteen grants have been issued, authorizing the diversion of 131,200 miner's inches of water. Four of these grants have been permitted to lapse, but the remaining nine, authorizing the diversion of 66,200 miner's inches of water, are in good standing. Three power plants have been installed, one of which is situated on the north fork of the Klondike river, and it appears that this plant is kept in operation during the winter, and the power generated is being used for heating and lighting purposes in the city of Dawson.

COAL MINING LANDS.

The total amount collected on account of the sale of coal mining lands up to the 31st of March, 1916, was $2,091,838.77.

The statement lettered "C," at the end of this report, shows the revenue derived from the sale of coal lands for each fiscal year since 1896.

COAL LEASES.

The total number of coal mining leases in force at the close of the fiscal year was 627, including a total area of 319,169 acres, distributed as follows: In the province of Alberta, 543 leases, embracing an area of 311,968 acres; in the province of Saskatchewan, 83 leases, embracing an area of 7,161 acres; and in the Yukon Territory, one lease, embracing an area of 40 acres.

The total number of leases of coal mining rights issued during the year was ninety, comprising an area of 32,295 acres. The total revenue received during the year for rental of coal mining rights was $104,485.22.

ROYALTY ON COAL.

Under the regulations governing the issue of leases to mine coal, the royalty is fixed at 5 cents per ton of 2,000 pounds on the merchantable output of the mine.

The following is a statement showing the amount collected on account of royalty on coal mined from lands in the western provinces, the Northwest Territories, and in the Yukon Territory, respectively, during each year since the regulations came into effect:—

Year.	Alberta.	Saskatchewan.	British Columbia.	Yukon.	N. W. T.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1903–4	56 90	Nil.	Nil.	2 40	Nil.
1904–5	2,822 00	110 70	"	47 00	"
1905–6	2,379 75	47 10	"	569 33	"
1906–7	3,865 26	74 20	"	517 34	"
1907–8	7,621 67	4 30	"	1,543 38	"
1908–9	5,322 39	358 11	"	371 73	"
1909–10	153,559 98	1,672 50	3 00	136 38	"
1910–11	218,932 88	2,184 74	3 50	125 00	"
1911–12	104,894 55	3,034 74	2 75	390 00	"
1912–13	142,997 79	3,145 72	6 95	1,069 11	"
1913–14	147,198 75	2,123 43	19 35	Nil.	"
1914–15	104,489 77	1,880 06	4 90	"	"
1915–16	67,190 17	2,601 52	3 50	"	5 10

By an Order in Council dated the 7th April, 1913, provision was made that owing to the scarcity of fuel in the Yukon Territory, no royalty shall be levied or collected on coal mined in that territory for a period of five years, that is, up to the 7th of April, 1918.

The total amount derived from coal mining lands on account of purchase price, rental, royalty and application fees, during the fiscal year, amounted to $175,710.54.

SESSIONAL PAPER No. 25

The following is a statement of the office work performed during the year:—

Letters received and recorded	23,743
Letters sent	53,561
Pages of memoranda and schedule	8,776
Plans and sketches prepared	2,766
Accounts kept posted	23,246
" rendered	12,865
Assignments accepted and registered	1,151
Returns examined and posted	2,134
Receipts issued	472
Refunds examined and prepared	358
New entries and renewals for mining locations granted in the Western Provinces and Territories, not including the Yukon.	1,324
Applications for coal locations received	162
" stone, gypsum and clay received	38
" petroleum and natural gas received	610
" quartz claims in Alberta, Saskatchewan and Manitoba	1,273
" placer mining claims in Alberta, Saskatchewan and Manitoba	51
" dredging leases	16
" homestead entries in the Yukon	10
" to purchase or lease land in the Yukon	60
" entries granted	10
Agricultural leases in force in the Yukon, comprising an area of 187·35 acres	25
Water-front leases in existence	20
Gold dredging leases issued	9
Coal mining leases issued covering an area of 32,295 acres	90
Quarrying leases issued covering an area of 1,309 acres	38
Clay leases issued covering an area of 60 acres	2
Petroleum and natural gas leases covering an area of 208,814 acres	596
Prospecting reservations made under section 18 of the Coal Mining Regulations covering an area of 47,942 acres	26

H. H. ROWATT,
Controller.

A.—STATEMENT of Receipts on account of Coal and Minerals in the Provinces and Territories, also Timber, Hay, Coal, Hydraulic Mining, Dredging, Royalty on Gold, Mining Fees, Rental of Agricultural Lands, Water-power and Water-fronts, and sale of Dominion Lands in the Yukon for the Fiscal Year ended March 31, 1916.

Month.	Quartz Acreage Sales	Dominion Lands Sales	Coal Sales.	Coal Mining	Coal Royalty.	Coal Rental.	Rental Yukon.	Timber Dues Yukon.	Mining Fees.	Hydraulic Leases.	Dredging Leases N.W.T.	Dredging Leases Yukon.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
April	154 95	0 69	.....	200 00	2,829 47	9,526 78	5,388 62	755 21	3,086 00	.....	.....	154 32
May	51 65	106 14	.....	335 00	2,867 20	5,519 16	11 22	407 75	4,205 00	.....	.....	100 00
June	22 69	.....	.....	40 00	9,862 04	22,649 34	497 20	1,601 93	3,825 50	.....	.....	.....
July	124 04	.....	.....	55 00	1,374 11	4,392 46	14 50	466 50	4,676 50	.....	.....	.....
August	360 07	229 73	88 78	40 00	6,607 55	2,871 10	21 48	1,026 37	4,316 50	1,019 05	.....	112 02
September	.....	10 00	.....	30 00	6,193 05	3,285 69	232 07	1,506 81	16,660 00	.....	.....	.....
October	.....	196 07	.....	100 00	1,746 15	5,451 40	12 50	877 75	6,584 50	73 58	.....	.....
November	3,523 56	90 35	5 00	150 00	2,524 05	7,324 02	142 03	425 00	4,090 50	375 00	.....	.....
December	234 44	10 65	50 00	20 00	7,104 55	2,693 34	15 16	1,297 11	8,179 00	1,383 00	.....	20 14
January	.....	76 65	10 00	160 00	10,348 24	9,168 92	210 05	1,521 61	5,644 50	.....	100 00	.....
February	51 59	32 05	11 25	65 00	8,940 03	17,931 86	533 57	599 00	3,199 50	.....	32 50	382 42
March	.....	133 65	.....	45 00	9,403 85	13,671 15	.....	1,077 79	2,191 15	.....	610 00	1 75
Totals	4,522 99	885 98	165 03	1,260 00	69,800 29	104,485 22	7,078 40	11,562 83	66,658 65	2,850 63	742 50	770 65

A. STATEMENT of Receipts on account of Coal and Minerals in the Provinces and Territories, etc.—*Concluded.*

Month.	Gold Export Tax.	Free Certificates Export of Gold.	Stone Quarry.	Registration Fees.	Homestead Fees.	Hay Yukon.	Tar-Sands.	Sand, Stone and Gravel.	Petroleum and Natural Gas.	Interim Receipt Account.	Total.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
April	104 20	2 50	426 93	15 00	10 00	.....	107 50	1 50	13,557 51	60 00	36,381 18
May	6,582 50	3 50	714 95	5 00	.....	30 00	.....	.....	4,216 99	.....	25,176 06
June	21,706,88	12 00	939 61	5 00	20 00	33 00	.....	.....	2,311 39	.....	63,526 58
July	18,554 59	7 50	349 82	16 50	10 00	63 00	.....	.....	1,495 24	.....	31,599 76
August	15,381 19	10 00	1,243 77	15 00	10 00	.....	.....	.....	227 21	.....	33,580 32
September	17,645 94	25 50	1,015 49	.....	10 00	.....	.....	0 50	609 69	.....	47,224 24
October	22,494 13	12 00	491 73	.....	10 00	.....	.....	.....	27,824 39	10 00	65,884 50
November	2,718 05	1 50	402 37	.....	10 00	.....	500 00	.....	12,345 77	.....	34,627 20
December	2,250 67	3 00	590 59	2 00	.....	.....	.....	.....	10,641 33	.....	34,495 18
January	1,168 57	1 00	783 04	2 00	.....	.....	.....	.....	547 33	49 01	29,790 92
February	2,259 61	1 00	1,080 31	13 00	20 00	.....	.....	.....	10,869 87	.....	46,022 56
March	590 56	3 00	1,258 26	.....	.....	.....	.....	0 50	9,509 16	166 75	38,662 57
Totals	111,457 19	82 50	9,296 87	73 50	100 00	126 00	607 50	2 50	94,156 08	285 76	486,971 07

B.—STATEMENT showing the total amount of Revenue collected at each Agency, including the Yukon Territory, for the Fiscal Year ended March 31, 1916. (Revenue received at Head Office is credited to the several Agencies in which the lands are situated.)

Agency.	Quartz Acreage Sales.	Dominion Lands Sales.	Coal Sales.	Coal Mining.	Coal Royalty.	Coal Rental.	Rental Yukon.	Timber Dues Yukon.	Mining Fees.	Hydraulic. Leases.	Dredging Leases N.W.T.	Dredging Leases Yukon..
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Arctic	3,758 00				5 10	5 00			227 50			
Battleford									7 50			
Calgary			4 26	195 00	11,611 32	26,398 26			445 00			
Dauphin				5 00					2,015 00			
Edmonton				30 00	14,370 05	58,428 70			3,368 50		250 00	
Estevan				25 00	2,138 93	1,214 21						
Grande Prairie				40 00	18 84	177 75						
Grouard				20 00		40 00			26 00			
Humboldt											460 00	
Kamloops												
Lethbridge			155 77	565 00	39,531 89	14,016 29			12 50			
Maple Creek				25 00	85 37	318 54						
Medicine Hat				190 00	290 15	530 20						
Moosejaw				75 00	257 03	648 04						
New Westminster					3 50	42 71					32 50	
Peace River Crossing												
Prince Albert									895 00			
Red Deer			5 00	50 00	1,368 22	2,559 76			4 00			
Revelstoke												
Saskatoon									148 00			
Swift Current				25 00	27 55	60 76						
Weyburn				10 00	92 34	45 00						
Winnipeg									4,498 65			
Dawson Gold Comm. Office									46,396 50	2,850 63		770 65
Duncan Mining Recorder's Office									3,795 00			
Sixty Mile Mining Recorder's Office									2,133 00			
Dawson Royalty Collector's Office												
Dawson Crown Timber Office								10,213 33				
Dawson Comptroller's Office												
Dawson Dominion Lands Office		758 73					4,267 12					
Dawson Mining Recorder's Office	661 86											
Whitehorse Asst. Gold Com'r Office									1,413 00			
Conrad Mining Recorder's Office									532 00			
Kluane Mining Recorder's Office									741 50			
Whitehorse Crown Timber Office								1,349 50				
Whitehorse Comptroller's Office												
Whitehorse Royalty Collector's O.												
Whitehorse Dominion Lands Office		127 25		5 00			2,811 28					
Whitehorse Mining Recorder's Office	103 13											
Totals	4,522 99	885 98	165 03	1,260 00	69,800 29	104,485 22	7,078 40	11,562 83	66,658 65	2,850 63	742 50	770 65

B.—Statement showing the total amount of Revenue collected at each Agency, including the Yukon Territories, etc—*Concluded.*

Agency.	Gold Export Tax.	Free Certificates Export of Gold.	Stone Quarry.	Registration Fees.	Homestead Fees.	Hay Yukon.	Tar Sands.	Sand, Stone and Gravel.	Petroleum and Natural Gas.	Interim Receipt Account.	Total.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Arctic											3,995 60
Battleford			1,230 36	8 00					1,983 02		7 50
Calgary								50	30 80		41,875 72
Dauphin			1,505 33				607 50	1 00	6,568 02		2,050 80
Edmonton											85,129 10
Estevan			60 65								3,378 14
Grande Prairie			324 98								297 24
Grouard									999 31		1,410 29
Humboldt			578 10						10		460 10
Kamloops			510 21					1 00			579 10
Lethbridge			100 71						67,382 87		122,174 53
Maple Creek			188 54						325 25		854 87
Medicine Hat			619 72						11,634 87		12,833 76
Moosejaw			898 08						15 00		1,614 79
New Westminster			187 10						2,408 88		3,385 67
Peace River Crossing			5 00						559 08		746 18
Prince Albert			120 00						45 00		945 00
Red Deer			40 00						1,064 13		5,171 11
Revelstoke			174 45								40 00
Saskatoon			260 00						164 50		486 95
Swift Current									40 00		413 31
Weyburn			2,493 64						2 00		149 34
Winnipeg									933 25		7,925 54
Dawson Gold Commissioner's Office										285 76	50,303 54
Duncan Mining Recorder's Office											3,795 00
Sixty Mile Mining Recorder's Office											2,133 00
Dawson Royalty Collector's Office	110,965 42										110,965 42
Dawson Crown Timber Office											10,334 33
Dawson Comptroller's Office		64 00				121 00					64 00
Dawson Dominion Lands Office				55 50	80 00						5,161 35
Dawson Mining Recorder's Office											661 86
Whitehorse Asst. Gold Com'r Office											1,413 00
Conrad Mining Recorder's Office											532 00
Kluane Mining Recorder's Office											741 50
Whitehorse Vrown Timber Office											1,354 50
Whitehorse Comptroller's Office		18 50				5 00					18 50
Whitehorse Royalty Collector's Office	491 77										491 77
Whitehorse Dominion Lands Office				10 00	20 00						2,973 53
Whitehorse Mining Recorder's Office											103 13
Totals	111,457 19	82 50	9,296 87	73 50	100 00	126 00	607 50	2 50	94,156 08	285 76	486,971 07

C.—STATEMENT showing the total Revenue derived from the sale of Coal Lands for each Fiscal Year since 1896.

	$ cts.
1896-1897	75 76
1897-1898	1,883 74
1898-1899	350 00
1899-1900	5,650 33
1900-1901	101,772 00
1901-1902	16,270 32
1902-1903	31,055 38
1903-1904	68,949 75
1904-1905	35,695 00
1905-1906	125,754 12
For the nine months ending March 31, 1907	335,795 97
1907-1908	346,813 23
1908-1909	276,186 86
1909-1910	377,445 86
1910-1911	191,257 23
1911-1912	11,861 66
1912-1913	1,889 52
1913-1914	5,529 55
1914-1915	326 29
1915-1916	165 03

D.—STATEMENT showing the total Gold Production, the total subject to Royalty and the total Royalty collected for each fiscal year from May 1, 1898, to March 31, 1916.

Fiscal Year.	Gold Production.	Subject to Royalty.	Royalty Collected.	Total Revenue.
	$ cts.	$ cts.	$ cts.	$ cts.
1897-1898	3,072,773 20	2,732,928 20	273,292 82	273,292 82
1898-1899	7,582,283 02	5,882,626 00	588,262 37	589,943 52
1899-1900	9,809,464 64	7,307,720 00	730,771 99	733,041 04
1900-1901	9,162,082 79	7,234,416 17	592,660 98	596,368 03
1901-1902	9,566,340 52	8,367,225 88	331,436 79	331,532 04
1902-1903	12,113,015 34	12,113,015 34	302,893 48	302,893 48
1903-1904	10,790,663 12	10,790,663 12	272,217 96	272,217 96
1904-1905	8,222,053 91	8,222,053 91	206,760 87	206,760 87
1905-1906	6,540,007 09	6,540,007 09	163,963 25	163,963 25
1906-1907	3,304,791 05	3,304,791 05	82,622 42	82,622 42
1907-1908	2,820,161 60	2,820,161 60	70,504 65	70,504 65
1908-1909	3,260,282 80	3,260,282 80	81,507 07	81,507 07
1909-1910	3,594,251 20	3,594,251 20	89,844 10	89,844 10
1910-1911	4,126,727 60	4,126,727 60	103,168 19	103,168 19
1911-1912	4,024,236 75	4,024,236 75	100,606 29	100,606 29
1912-1913	5,018,411 85	5,018,411 85	125,460 52	125,460 52
1913-1914	5,301,507 60	5,301,507 60	132,537 69	132,537 69
1914-1915	4,649,634 40	4,649,634 40	116,241 04	116,241 04
1915-1916	4,458,278 00	4,458,278 00	111,457 19	111,457 19
Totals	117,416,966 48	109,748,938 56	4,476,209 67	4,483,962 17

No. 30a.

DAWSON, Y.T.

This is my annual report as Administrator of the Yukon Territory for the fiscal year ending March 31, 1916:—

GOLD PRODUCTION.

The amount of gold mined on which royalty was paid was 291,759·65 ounces, valued at $15 per ounce, being $4,376,393.20; $15 per ounce being the value placed on gold for the purpose of computing the royalty chargeable thereon. The royalty paid amounted to $109,410.07.

As in the past several years the gold produced was chiefly from the dredging and hydraulic operations carried on by the Canadian Klondyke Mining Company, Yukon Gold Company, and Walkers Ford Gold Dredging Company. The latter company have the only dredge in operation on the west side of the Yukon river at the present time, the operations being confined to the Miller Creek concession, situated in the Sixtymile district.

There are also a large number of individual miners operating on the various gold-bearing creeks throughout the territory.

At the session of the Yukon council held in April, 1915, a sum of money was voted for the purpose of assisting *bona fide* prospectors who were willing to prospect in remote districts difficult of access, by furnishing them with free transportation to, or as near to their destination as possible. In order to qualify for this assistance every prospector is required to take with him not less than one year's supplies. As a result of this inducement to the prospector, at least one important discovery was made last summer. I refer to the discovery made on Rude creek, a tributary of the Klotassin river, where over 450 claims have been staked and recorded on Rude and other creeks and tributaries in that vicinity. Some fairly good pay has been found on a number of claims, but it is generally conceded by men interested that it will take all of the present season to fully demonstrate the value and extent of the gold deposit in the new district. Quite a number of good and reliable prospectors, together with their outfits, were taken to the upper reaches of the Pelly and McMillan rivers last fall, but as none of those men have since returned to Dawson it is not known whether or not any of them have been successful in making a discovery of any importance.

A detailed report of the operations of the several mining companies and individuals engaged in the mining industry throughout the territory can be found in the reports of the Gold Commissioner and Territorial Assayer forwarded herewith.

PUBLIC WORKS.

A great deal of improvements were made to the Dawson-Whitehorse road in the past year. Some cut-offs were constructed at various points along the old road. This was generally done for the purpose of cutting down the mileage of the road wherever it was found practicable.

The ferries which were established at the crossings of the Yukon, Pelly, and Stewart rivers in 1914 were properly maintained. These ferries have added greatly to the comfort and safety of the travelling public, and are a great insurance of safety in the transportation of mail matter during the periods of the closing of navigation in the fall and opening up again in the spring.

All other roads throughout the territory were properly maintained, and a considerable mileage of new roads constructed in various parts of the territory.

A sleigh trail was constructed from the bank of the Yukon at the mouth of Isaac creek into Rude, a distance of about 25 miles. This was a great boon to the prospectors in the new district.

QUARTZ MINING.

Owing to the unprecedented rise in the price of copper in the last year, great activity in the copper mining industry in the territory is plainly manifest. Especially is this the case in the Whitehorse district, where most of the copper mines in the territory are located.

The antimony deposit in the Wheaton River district is commanding a great deal of attention just now. Recent reports are to the effect that a company of outside capitalists have bonded a number of these antimony properties with a view of opening them up and placing them on the list of ore-shipping properties during the present season.

The silver-lead property, known as the "Silver King" mine at Galena creek in the Stewart River district, which is undoubtedly the richest quartz mine being operated in the territory, has been working all winter, the ore being hauled and stacked up on the banks of the Stewart river, some 30 miles distant from the mine, in readiness for shipment to the smelter on the opening of navigation.

The Bear Creek Mining Company, Limited, whose property is located on Bear creek, near Dawson, have done a great deal of development work in the last two years, and the prospects have been of such an encouraging nature as to warrant the purchase of a ten-stamp modern milling plant. This plant will be shipped to Dawson on the opening of navigation, when it will be taken at once and installed on the property, and the company hope to be able to get the mill working before the end of the season.

PUBLIC BUILDINGS.

The necessary repairs and improvements were made to all government buildings in the territory. A new general hospital building was erected at Whitehorse, an appropriation having been made by the Yukon Council for that purpose. The new hospital is equipped to accommodate twenty-five patients. It has been a long-felt want in Whitehorse, as the old hospital building was a low, rambling structure with only accommodation for nine persons, and was so constructed that it was found to be practically impossible to maintain the heat at a given temperature during cold weather.

The public schools of the territory have been maintained at their usual high standard of efficiency. The average attendance at the Dawson public school for the past year has been increased over that of the previous year. A number of assisted schools have been maintained in various parts of the territory.

ADMINISTRATION OF JUSTICE.

With the exception of one very serious murder case, the territory has been unusually free from crime. The case referred to was that of the murder of four men which took place in the vicinity of the town of Whitehorse on the 30th of September, 1915. The murderer, who was a foreigner, was almost immediately apprehended by the Royal Northwest Mounted Police. He was tried at Whitehorse on the 20th of October, 1915, found guilty, and sentenced to be hanged on the 10th day of March, 1916, and the sentence was duly carried out on that day.

The numerical strength of the Royal Northwest Mounted Police has been sufficient for the proper policing of the territory.

I transmit herewith the reports of the Gold Commissioner and Crown Timber Agent, Government Assayer, Comptroller and Director of Surveys.

G. N. WILLIAMS,
Administrator.

No. 30b.

DAWSON, Y.T.

This is my annual report as Gold Commissioner of the Yukon Territory, for the fiscal year ending March 31, 1916, accompanied by the following statements:—

1. A financial statement, showing the receipts in the Gold Commissioner's office during the said year, and also receipts in the offices of the Mining Recorders for the Duncan and Sixty-mile districts.

2. A financial statement of the receipts in the Gold Commissioner's office for the fiscal year, being a recapitulation.

3. A comparative statement of the receipts for the fiscal years ending March 31, 1915, and March 31, 1916.

The comparative statement referred to shows a decrease in revenue of $9,522.35 compared with that of the year ending March 31, 1915. The revenue for 1914 was, however, above the average of former years, largely on account of dredging rentals.

Mining operations in the various mining districts of the territory have been the subject-matter of reports from the various mining recorders, agents to the mining recorder and the mining inspector, for the year which ended the 1st of November last. Duplicate copies of these reports have been forwarded to the Department of the Interior from time to time, and the originals are on file for your information.

THE YUKON GOLD COMPANY.

Dredging operations.—The Yukon Gold Company operated to their full capacity their dredges and hydraulic plants during the year. Seven dredges were operated during the dredging season of 153 days, particulars as follows:—

No.	Make.	Capacity of Buckets.	Location.
4	Marion	7 cubic feet	44 to 46 below Bonanza.
1	Bucyrus	5 "	94 to 97 "
2	"	5 "	45 to 41 "
5	"	7 "	6 below to Disc. "
8	"	7 "	24 to 30 above "
9	"	7 "	21 to 26 Eldorado Creek.
6	"	7 "	11 to 13 Gold Run Creek.

These dredges are all electrically driven, the power being furnished by the company's hydro-electric power plant situated on the Twelve-mile river some 70 miles distant from the point where the mining operations are carried on.

The average number of men employed operating these dredges and steam-thawing plants in connection with the system was four hundred, a total yardage of 5,425,000 cubic yards of material having been dredged.

The company's No. 3 Bucyrus dredge, which operated in 1914 on Lower Bonanza, having completed the work at that point, was dismantled at the close of the season 1914, and during the past winter has been hauled to the mouth of Bear creek, where it will be assembled and operated during the present season.

Hydraulic operations.—Hydraulic operations were carried on as in former years, the water supply being up to the average. No bad breaks occurred in the 70-mile ditch which conveys the water from the Twelve-mile river to the points where hydraulicing was carried on. The following pits were operated during the year: Adams Hill, Bunker Hill, Trail Gulch, Monte Cristo Gulch, American Gulch, King Solomon Hill, Magnet Gulch, Lovett Gulch, Fox Gulch, and American Hill. An average of ninety men were employed throughout the season in connection with hydraulicing, and 3,000,000 yards of material was handled.

Miscellaneous.—In addition to the men directly employed in the dredging and hydraulicing operations, a considerable force was employed in prospecting with Keystone drills, in the machine shops of the company, at the power plant at Twelve-mile, and in connection with the extensive system of ditches and flumes maintained in connection with the hydraulic operations of the company.

THE CANADIAN KLONDYKE MINING COMPANY, LIMITED.

Dredging operations.—This company operated their four dredges during the dredging season as follows:—

Name.	Capacity of Buckets.	Location.
Canadian No. 1	7½ cubic feet	Upper Hunker Creek.
" 2	17 "	Hydraulic Lease No. 18. Dredging Lease No. 24.
" 3	17 "	Placer Claims below Maris' Discovery Klondike River, Dredging Lease No. 23 and Hydraulic Lease No. 18.
" 4	17 "	Dredging Lease No. 23 and Hydraulic Lease No. 18.
" 1	Operated 223 days	
" 3	" 209 days	
" 4	" 235 days	
" 2	" 128 days	

The latter dredge was the one that was sunk in the Klondike river during the summer of 1914 and was successfully raised during the past summer, the hull enlarged and again commenced operating on the 20th September and continued operating until 25th January, 1916, thus breaking all previous records for winter dredging. During the greater part of the time this dredge operated in January, the temperature was between 50 and 60 degrees below zero. In this connection the management of the company reports that as far as the temperature was concerned, they could have continued dredging during the entire winter, but that it was necessary to close down to make the necessary repairs for 1916 operations.

This severe test has demonstrated, however, beyond a doubt, that it is possible to operate dredges in thawed gravels, such as exist in the valley of the Klondike, in the most severe winter weather. These dredges are all electrically driven, the power being furnished by the plant of the Canadian Klondyke Power Company, Limited, at the North Fork of the Klondyke river. This plant is under the same management as the Canadian Klondyke Mining Company, Limited.

The number of men employed in connection with these dredges average three hundred, and 6,500,000 cubic yards of gravel was dredged.

Hydraulic operations.—The company completed during the year, the installation of their pumping plant near the mouth of Hunker creek. Three thousand inches of

water is diverted from the Klondike river near the mouth of Rock creek, brought by gravity down the left limit of the Klondike and a short distance up Hunker creek; from there it is pumped to the hills on the left limit of Hunker creek and from there conveyed by a system of ditches and flumes to the property of the Dago Hill Mining Company on Last Chance and Hunker creeks. This system was completed in August of last year and successfully operated throughout the remainder of the season. The local supply of water on these hills and benches has always been entirely inadequate to economically work the large area of gravel in that vicinity.

The pumping plant referred to is electrically driven, the power being furnished by the hydro-electric power plant of the Canadian Klondyke Power Company at the North Fork of the Klondike river, and the installation of the system cost in excess of $100,000.

Miscellaneous.—In addition to the men employed in the dredging and hydraulicing operations of the company referred to, a large force was kept employed in prospecting with Keystone drills and shafts on hydraulic lease No. 18, in the large machine shops of the company that are necessary to maintain for the replacing and repairing of dredge parts, and in the many other activities of the company.

NORTHWEST CORPORATION, LIMITED.

This company is the operating company for the Dominion Mining Company operating on Upper Dominion creek, the Big Creek Mining Company on Lower Dominion creek, and the Calder Mining Company on Quartz creek. Comparatively little work was done during the year, when the extent of their holdings is taken into consideration. On Dominion creek, between No. 30 and 85 below Lower Discovery, 150,000 cubic yards of over burden was removed by ground sluicing, and between No. 244 and 300 below Lower Discovery 200,000 cubic yards was removed by ground sluicing, and on Quartz creek, 75,000 cubic yards was removed. An average of forty men was employed throughout the season in connection with these various operations.

The excavator referred to in my report of last year was installed late in the season on No. 85 below Lower Discovery, Dominion creek, but it was not possible to give the machine a satisfactory trial before the close of the open season.

This company is financed by English capital, and although a very heavy expenditure has already been incurred by securing property by purchase and by installing an extensive system of ditches and flumes, the war has made it very difficult, if not impossible, for the company to secure the additional capital necessary to carry out their plans, and install the necessary machinery to commence actual mining operations. From the present outlook, it is most unlikely that any operations, other than those necessary to represent the ground, will be undertaken before the close of the war.

INDIVIDUAL OPERATIONS.

Other than the large scale operations of the companies referred to, at least as many as in 1914 have been employed in individual placer mining operations. Sulphur creek, with twenty-two steam-thawing and hoisting plants in operation, is the lead in this respect. On Hunker creek and tributaries, open cutting and drifting operations were carried on on Gold Bottom and Upper Hunker, and hydraulicing on Temperance Hill, Paradise Hill, Last Chance, and Dago Hill. Quartz creek had ten individual outfits working, Black Hills, fourteen; Scroggie and tributaries, twenty; while on Clear, Kirkman, Henderson, Thistle, and Ten-mile creeks, a number of miners were profitably employed.

More claims were operated on Nansen creek and tributaries than in any previous year. The Nesling Mining and Development Company having acquired, by purchase, practically the whole of the upper end of Nansen creek and tributaries, and contemplate extensive operations during the coming season.

A discovery was made during the summer of 1915 on Rude creek, a tributary of the Klotassin river. The usual stampede resulted, and some four hundred and fifty claims recorded on Rude creek and tributaries in that vicinity. Considerable prospecting has been done during the past winter, and while no very rich pay has yet been found, fair pay has been located on some half-dozen claims, and it is hoped that further development work will extend the area.

PLACER MINING, SIXTYMILE DISTRICT.

There has been no new development in this district during the year, but the property on the Sixtymile between Miller and Boucher creeks, referred to in my report of last year, has unfortunately not come up to the expectation of the locators, and it now appears extremely doubtful if much of this area can be profitably mined by individual operations. The miners on the other creeks in the district have had a successful season and the Milvain dredge, operating on the Miller Creek concession, reports a very successful season of work.

PLACER MINING, DUNCAN DISTRICT.

The placer operations on Dublin, Highet, and Haggart creeks were on about the same scale as in 1914, while more work was done on Duncan creek than in the preceding year. A new discovery was made on Johnson creek, a tributary of the McQuesten river, some fifty claims were located and from the development work already done, it would appear that at least a portion of this creek can be profitably mined.

LODE MINING, DAWSON MINING DISTRICT.

A large number of mineral claims are in good standing in this district, but very little work outside the necessary representation work has been done, except on the "Red Hill" mineral claim on Gold Run creek, owned by Mr. James Lloyd, where *bona fide* development work has been carried on throughout the year, with encouraging results, and on the property of the Bear Creek Mining Company at Bear creek, where development work has been carried on throughout the year with results so satisfactory to the management that the necessary capital has been procured to install a mill on the property during the coming summer.

LODE MINING, DUNCAN MINING DISTRICT.

Considerable development work has been performed during the year on the Dublin Gulch properties, particularly on the Stewart and Catto group. The owners report encouraging results and propose to continue development work on these properties on a large scale.

The "Silver King" mineral claim on Galena creek is attracting a great deal of attention among mining men throughout the territory, and the results obtained in the development of this property has given encouragement to other prospectors in the vicinity, and much *bona fide* prospecting work has been performed throughout the year on claims in that vicinity. Over one thousand tons of ore was mined and shipped from the "Silver King" during 1915 to the Selby Smelter in San Francisco, and Mr. T. P. Aitken, now the owners of this claim, furnishes the following figures regarding this shipment of ore: Mining cost, $12; transportation from mine to smelter, $41; gross value in silver, lead, and gold, approximately $140. The main

shaft is now down 140 feet, and it is necessary to handle 60 gallons of water per minute to keep the mine dry. About sixteen hundred tons of ore has been mined and hauled to Mayo Landing during the past winter, for shipment to the smelter on the opening of navigation. This ore will probably run to $150 to the ton, based on 50-cent silver. Another 14-inch chute of ore exposed on the surface is being developed on this property; this ore is of a higher grade than any now being mined.

GEORGE P. MACKENZIE,
Gold Commissioner.

FINANCIAL STATEMENT of the Gold Commissioner's Office from April 1, 1915, to March 31, 1916, Dawson, Y.T.

RECEIPTS.

Placer—			
To Grants	$ 5,040 00		
Relocations	1,630 00		
Renewals	36,017 50		
Registered documents	1,622 00		
Abstracts	84 50		
		$44,354 00	
Quartz—			
To Records	$ 505 00		
Certificate of work	1,015 00		
" partnership	25 00		
" improvements	20 00		
Registered documents	157 50		
Lieu of assessment	100 00		
Acreage and Crown grants	701 86		
Abstracts	5 00		
		2,529 36	
Sundry Accounts—			
To Water rights	$ 175 00		
Hydraulics	2,495 77		
Dredging	518 76		
		3,189 53	
Duncan—			
To Placer grants	$ 780 00		
" relocations	10 00		
" renewals	2,092 50		
" registered documents	126 00		
Quartz records	325 00		
" certificate of work	327 50		
" certificate of partnership	27 50		
" registered documents	106 50		
		3,795 00	
Sixty-mile—			
To Placer grants	$ 80 00		
" relocations	190 00		
" renewals	1,760 00		
" registered documents	103 00		
		2,133 00	
Total		$56,040 89	

DISBURSEMENTS.

To Comptroller	$56,040 89	
Total	56,040 89	$56,040 89

COMPARATIVE STATEMENT.—Returns, Gold Commissioner's Office, Dawson, Y.T.

	Year ending March 31, 1915.	Year ending March 31, 1916.	Increase 1916.	Decrease 1916.
Placer grants	8,940	5,900		3,040
Placer renewals	39,235	39,870	635	
Placer relocations	2,980	1,830		1,150
Placer registered documents	2,677	1,851		826
Placer abstracts	591	84·50		506·50
Water rights	135	175	40	
Hydraulics	1,470·98	2,495·77	1,024·79	
Dredging	5,167·49	518·76		4,648·73
Quartz records	845	820		15
Quartz registered documents	380	264		116
Quartz certificate of work	1,477·50	1,342·50		135
Quartz certificate of partnership	32·50	52·50	20	
Quartz certificate of improvement	40	20		20
Quartz lieu of assessment	500	100		400
Quartz acreage and crown grant	1,083 52	701·86		381·66
Quartz abstracts	8·25	5·00		3·25
Totals	65,563·24	56,040·89	1,719·79	11·242,14
		Net decrease—$9,522·35		

FINANCIAL STATEMENT.—Gold Commissioner's Office Year ending March 31, 1916.

	Dawson.	Duncan.	Sixty-Mile.	Total.
	$ cts.	$ cts.	$ cts.	$ cts.
Placer grant	5,040 00	780 00	80 00	5,900 00
Renewal grant	36,017 50	2,092 50	1,760 00	39,870 00
Re-location grant	1,630 00	10 00	190 00	1,830 00
Registration documents, placer	1,622 00	126 00	103 00	1,851 00
Abstract, placer	84 50			84 50
Water rights	175 00			175 00
Hydraulics	2,495 77			2,495 77
Dredging	518 76			518 76
Quarts records	505 00	325 00		830 00
Certificate of work	1,015 00	327 50		1,342 50
Certificate of partnership	25 00	27 50		52 50
Certificate of improvements	20 00			20 00
Registration document quartz	157 50	106 50		264 00
Lieu of assessments	100 00			100 00
Acreage and Crown Grant	701 86			701 86
Abstracts, quartz	5 00			5 00

No. 30c.

DAWSON, Y.T.

This is the annual report of the Whitehorse Dominion Lands District for the fiscal year ending March 31, 1916. It covers all dealings in respect to Crown Timber and Dominion Lands throughout the district, and all mining matters transacted in the three recording offices of Whitehorse, Kluane, and Conrad.

LODE MINING.

Whitehorse, as you are well aware, is the centre of the copper mining industry in the territory. It has had many ups and downs in past years, sometimes promising rapid development, but always something untoward seems to have turned up to set at naught the hopes and efforts of those promoting the advancement. Now, however, things are looking brighter and there is every prospect that several of the most promising claims on the copper belt will be given a chance to prove their worth. And that they have great merit is, I think, amply proved by the case of the "Grafter," one of the claims situated in the very centre of the belt.

This claim started work on June 10, 1915. There was at that time a shaft 125 feet deep on the property, and considerable drifting had been done on the 80-foot level. But there was no machinery or other working material on the ground. The workings were then full of water also. A boiler, hoist, etc., were quickly installed, the Government diamond drill requisitioned and set to work, and since that time a steady flow of shipments has been poured forth of ore averaging between 6 and 7 per cent. These shipments aggregated the fine total of 6,500 tons up to April 1 last, and the net returns from the smelter, after deducting smelter and transportation charges, showed the handsome sum of $93,000. About thirty-five men have been employed, nearly one-third of whom were wood cutters and teamsters. The mine is being operated by its owners, who are all local men. They are Whitney and Pedlar, Robert Lowe, E. A. Dixon, and George Armstrong, and I cannot but feel that the progress made is both highly creditable to them and strongly indicative of the value of the camp as a copper producer. Mr. Armstrong has had charge of the workings as manager. The diamond drill has been steadily employed for several months, and I understood that fully $25,000 has been expended in prospecting and development work alone.

The "Pueblo" property, which it will be remembered was shut down shortly after the outbreak of the European war, is, I am glad to say, again in full operation. At the time of the shut-down the property was being operated by the Atlas Mining Company, under the management of Mr. W. D. Greenough. This company has now dropped out, however, and a new company designated the Yukon Copper Company, Limited, has been organized, with Doctor Thompson, M.P., for Yukon as president, and Mr. Greenough still as manager. The re-opening work was started on the 20th of February last, and as the workings were full of water, considerable time was required to pump this out. That this work was pushed with vigour may be inferred from the fact that some four thousand tons of ore had been mined and shipped up to April 1. About 150 men are now employed. This force will be greatly increased, and it is confidently predicted that an output of 250 tons of ore will be attained.

The "War Eagle" and "Copper King" are other properties which are now being operated in a small way. Both are being operated by practical miners on a percentage basis, and shipments of ore have been made from both. The former purposes installing machinery, including a hoist, boiler, etc., at an early day.

The placer output of the district has been fairly maintained. The Livingstone Creek camp has developed most promising features, and the hopes of the operators are higher than they have been for years. And the same may be fairly said of Kluane, where some valuable prospecting has been done by persistent and experienced miners.

There has been nothing beyond the usual movement in connection with timber and Dominion Lands. Two homestead entries have been filed, and one timber and seven cordwood permits isued. Under the latter there was collected royalty on 2,619 cords of wood.

The fur industry is pretty much in the same position as last year, but it is confidently expected that the output of young stock this spring will be both large and valuable.

The past winter was an unusually severe one, and particularly on horses. The snowfall was unusually heavy, and the cold severe and protracted. The consequence was that the mortailty among horses was unusually great.

I attach tables Nos. 1, 2, and 3, showing the revenue from the various offices of the district for the entire year.

R. C. MILLER,
Assistant Gold Commissioner.

TABLE No. 1.—Statement showing the collections made in the Office of the Assistant Gold Commissioner, and the Crown Timber and Land Agent, Whitehorse, Y.T., during the fiscal year 1915-1916.

Month.	Mining Dues.									Timber and Land Dues.					Export Tax Gold.		Game Licenses.	Total. 1915-16	Total. 1914-15
	Placer.				Quartz.														
	Grants.	Re-locations.	Renewals.	Registered documents.	Grants.	Certificate of work.	Payment in Lieu.	Registered documents.	Acreage and Crown Grants.	Timber.	Dominion Lands	Homesteads.	Coal.	Hay.	Royalty.	Free Gold.			
1915.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
April		10 00	10 00	10 00		2 50				170 00	2,365 00				9 59	1 00		2,578 09	2,422 03
May						20 00		2 50		5 00				5 00				32 50	341 71
June		20 00	30 00	4 00	5 00	27 50				60 00	346 28	10 00			27 82	1 00		531 60	313 39
July	150 00	50 00	20 00	4 00		5 00				2 00					74 82	1 00		306 82	308 56
August	160 00		30 00	27 00	5 00	35 00		15 00	56 54	150 00	54 23				39 57	1 00	300 00	873 34	1,175 49
September	30 00	20 00	120 00	20 00	5 00	7 50	300 00			5 00	10 00		5 00		149 77	5 00		677 27	1,241 88
October			100 00	10 00		2 50		5 00		210 00					67 25	9 00	100 00	503 75	253 55
November											163 02				86 25			249 27	376 00
December	20 00	10 00	40 00	2 00		5 00				651 50	10 00				11 75	50		750 75	91 57
1916.																			
January				7 00				5 00		96 00					94			108 94	80 63
February				6 00				5 00	56 59						50			68 09	74 00
March		10 00	30 00	8 00		2 50									23 51			74 01	438 35
Totals	360 00	120 00	380 00	98 00	15 00	107 50	300 00	32 50	113 13	1,349 50	2,948 53	10 00	5 00	5 00	491 77	18 50	400 00	6,754 43	7,117 16
No. of receipts	36	12	30	33	3	43	3	12	4	19	7	1	1	1	51	31	4	291	274

TABLE No. 2.—Statement showing the collections made in the Office of the Mining Recorder for the Conrad District during the Fiscal Year ending March 31, 1916.

Month.	Quartz, Mining Dues.					Totals.	
	Certificate of Work.	Certificate of Part.	Payment in Lieu.	Registered Documents.	Grants.	1915–16.	1914–15.
1915.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
April	5 00					5 00	10 00
May	5 00			15 00	5 00	25 00	50 00
June	2 50				50 00	52 50	2 50
July	35 00	2 50		15 00		52 50	359 96
August	32 50		100 00	32 50	40 00	205 00	175 00
September	22 50			5 00		27 50	25 00
October	5 00					5 00	2 50
November	2 50		100 00			102 50	102 50
December	2 50					2 50	
1916.							
January				17 50		17 50	2 50
February				5 00		5 00	5 00
March				15 00		15 00	2 50
Totals	112 50	2 50	200 00	105 00	95 00	515 00	737 46
No. of Receipts	45	1	2	16	19	83	99

TABLE No. 3.—Statement showing the collections made in the Office of the Mining Recorder for the Kluane District during the Fiscal Year ending March 31, 1916.

Month.	Placer Mining Dues.				Quartz, Mining Dues.		Totals.	
	Grants.	Relocations.	Renewals.	Registered Documents.	Certificate of Work.	Certificate of Part.	1915–16.	1914–15.
1915.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
April		130 00	10 00	8 00			148 00	207 00
May	20 00	20 00	10 00	8 00			58 00	75 00
June		10 00	30 00				40 00	30 00
July			20 00	2 00		2 50	24 50	50 00
August		10 00	40 00				50 00	71 00
September								350 00
October	20 00	10 00	240 00	18 00			288 00	137 00
November	60 00		20 00		5 00		85 00	292 00
December								54 00
1916.								
January				9 00	2 50		11 50	8 00
February			20 00	14 00			34 00	97 00
March								32 00
Totals	100 00	180 00	390 00	59 00	7 50	2 50	739 00	1,403 00
No. of Receipts	10	18	39	20	3	1	91	165

No. 30d.

DAWSON.

This is my report as Crown Timber and Land Agent of the Dawson District for the year ending March 31, 1916, accompanied by the following statements:—

1. Statement showing the revenue collected in the Timber Branch of this office from royalty on wood and timber cut on timber berths, dues paid in connection with timber and wood permits, seizure dues on wood and timber cut in trespass, and hay permits.

2. Statement of revenue collected in the Dominion Lands Branch of this office, on land rentals, land sales, office fees, rental coal lands and homestead entries.

These statements show a net increase of $422.09 in the Crown Land Branch and a decrease of $1,791.15 in the Crown Timber Branch, compared with the statements of 1915. The decrease in the timber branch is accounted for by the fact that coal is gradually taking the place of wood for domestic purposes in Dawson and a consequent decrease in the amount of wood for domestic use.

WOOD AND TIMBER.

The Yukon Saw-mill Company, now owned and operated by Messrs. Neill and Volkman, reports a successful year. This mill company, now the only one operating in Dawson, manufactures all the lumber required to supply the local market, and carries on hand a well-assorted stock. As there is very little building being carried on, the demand is largely for mining purposes.

C. L. Snell and J. B. Lefebvre each operated their mills at Mayo, and continue to supply at reasonable prices the lumber required in that district.

The supply of wood in the local market available for domestic consumption is now very low. This is accounted for largely by the fact that the Dawson Electric Light Company in December last ceased to take electrical energy from the Canadian Klondyke Power Company's hydro-electric power plant at the North Fork, and not having a supply of coal in their Dawson bunkers, came unexpectedly into the market for several thousand cords of wood to operate their own plant throughout the winter.

Inspections of the various wood and timber camps have been made at different times throughout the year.

I am pleased to report that no forest fires of any magnitude occurred during the year.

COAL.

The Five Fingers Coal Company operated their mine at Tantalus during the year, employing fourteen men. The coal brought to Dawson from this mine during 1915 was of better quality than any in former years. This company now furnishes a considerable portion of the coal used on the White Pass railway, and practically all the river steamers going south during the summer push a barge of coal from the mine to Whitehorse.

The Northern Light Power and Coal Company mined several thousand tons of coal, which is now in their bunkers at the mine, but no coal was brought to Dawson from this mine during the year.

AGRICULTURE.

The farmers report a successful year. The potato crop, both in quantity and quality, was above the average. Very little vegetables and garden truck is now imported into the territory.

G. B. MACKENZIE,
Crown Timber and Land Agent.

CROWN TIMBER BRANCH.

	Royalty.	Timber Permits.	Seizure Dues.	Hay Permits.	Total.
1915.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
April	5 50	496 00	83 71	.....	585 21
May	166 00	214 25	22 50	25 00	427 75
June	90 56	1,172 87	278 50	33 00	1,574 93
July	.....	416 00	48 50	63 00	527 50
August	57 87	803 50	15 00	.....	876 37
September	32 50	1,353 69	115 62	.....	1,501 81
October	.....	463 25	204 50	.....	667 75
November	.....	420 00	5 00	.....	425 00
December	77 11	568 50	.....	.....	645 61
1916.					
January	103 50	87 50	127 50	.....	318 50
February	161 00	381 00	57 00	.....	599 00
March	100 00	959 29	18 50	.....	1,077 79
Totals	794 04	7,335 85	976 33	121 00	9,227 22

Total receipts 1914–1915..... 11,018 37
Total receipts 1915–1916..... 9,227 22

Net decrease 1915–1916..... $1,791 15

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CROWN LAND BRANCH.

——	Land Rentals.	Land Sales.	Office Fees.	Rental Coal Lands.	Home-steads.	Total.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1915.						
April	3,033 62	69				3,034 31
May	11 22	106 14				117 36
June	150 92				10 00	160 92
July	13 50		11 50		10 00	35 00
August	21 48	175 50			10 00	206 98
September	232 07				10 00	242 07
October	12 50	196 07			10 00	218 57
November	32 03	37 33			10 00	79 36
December	15 16	65	2 00			17 81
1916.						
January	210 05	76 65	2 00			288 70
February	493 22	32 05		40 35	20 00	585 62
March		133 65				133 65
Totals	4,225 77	758 73	15 50	40 35	80 00	5,120 35

Total receipts 1914–1915	4,698 26
Total receipts 1915–1916	5,120 35
Net increase 1915–1916	$422 09

No 30e.

DAWSON, Y.T.

This is the annual report of the Comptroller's Office for the fiscal year ending March 31, 1916.

Under the appropriation through the Department of the Interior, "Administration of the Yukon Territory," the expenditure amounted to $129,965.87, as shown by the monthly statements and vouchers forwarded to the department.

The expenditure on account of the Department of Justice was $17,410.56, monthly returns being made to that department.

Under the Letter-of-Credit account, Department of Public Works, for maintenance and repairs of public buildings in the Yukon Territory, the expenditure was $58,737.64, and for river improvement work, $4,876.91.

The expenditure on account of the Department of Indian Affairs for the relief of sick and destitute Indians in the Yukon Territory was $10,506.46.

The royalty export tax collected in the territory for the year ending March 31 amounts to $109,410.07; collected at Dawson, $108,918.30; Whitehorse, $491.77; at Fortymile, nil.

The revenue from free certificates issued to exporters of gold from Alaska was $82.50; collected at Dawson, $64; and Whitehorse, $18.50.

The revenue collected in the Gold Commissioner's office on account of mining dues amounted to $56,040.89; and in the Crown Timber and Land Agent's office on account of Crown timber, $9,227.22, and Dominion Lands, $5,120.35. The revenue from these various sources was deposited in the Dominion Revenue Trust Account in the Canadian Bank of Commerce daily as received, and drafts purchased weekly in favour of the Receiver General, and forwarded to the department. Weekly statements of these various sources of revenue, with counterfoils, were checked in this office and transmitted to the department, and monthly summaries were also checked and transmitted.

The revenue in the Registrar's office on account of Land Titles fees for the year ending March 31, amounted to $908.15, which was deposited daily in the Dominion Revenue Trust account as received, and drafts purchased weekly in favour of the Receiver General, and forwarded to the department. Monthly statements in duplicate were also checked in this office and forwarded to the department.

The revenue from the sale of Yukon Territorial Court law stamps amounted to $2,535.40, an increase of $301.55 over last year.

G. A. JECKELL,
Comptroller.

No. 30f.

This is a report of the Survey office for the year ending March 31, 1916.

I was in Ottawa at the end of the fiscal year March, 1915, arriving there the end of January. With the assistance of T. A. Dickson, draughtsman, Whitehorse, and T. J. Boond, draughtsman, Dawson, I compiled data for a new map of the Yukon, and handed same over to J. E. Chalifour, Chief Geographer, for future reference and publication. I also made additions to several group sheet maps while in Ottawa and handed same to the Surveyor General. I made a general map of the Yukon for wall use and demonstrating. I left Ottawa for Whitehorse on May 28.

In company with H. G. Dickson, D.L.S., of Whitehorse, I made an examination of the Wheaton district, and later of the Kluane district beyond Champagne Landing. Later I made an examination of the pasture land enclosed by the White Pass and Yukon route, on the west side of lake Labarge. I concluded that the pasture lands between Champagne Landing and Tahkeena were the best to draw attention to, by making stadia traverse of the meadows only, which is not expensive survey work.

I proceeded to Dawson and recommended a contract to Dickson, including the unsurveyed portion of the Kluane road. The field work by Dickson is complete, but the returns have not yet been received.

On July 13 I proceeded from Dawson to Mayo, and returned on August 12. Meantime I surveyed Mayo Indian reserve for the Department of Indian Affairs, made two small correction surveys at Minto for the Department of the Interior, and made examination of H. G. Dickson's 1914 contract on the Sixtymile river.

It took the balance of August and September to make the returns of surveys made at Minto and Mayo. It would greatly facilitate future surveys for the Indian Department, if expense of same would be provided through the comptroller here, as it is somewhat difficult to keep the Indian Department and Department of the Interior surveys separate to the satisfaction of the Ottawa authorities, whereas Mr. Jeckell has a local knowledge of the situation.

In this connection, I have telegraphic instructions from the Secretary of the Department of Indian Affairs to survey the 320-acre Indian reserve at the mouth of Little Salmon river. This matter is in abeyance, pending further instructions from the Secretary and Deputy Minister of the Department of Indian Affairs.

I have also been consulted in reference to the proposed 640-acre survey at Nasutelin bay, Teslin lake, southern Yukon.

The following Interior surveys are in abeyance pending further instructions from the Surveyor General, as follows:—

Homestead Locations—

Robert Leitch, Indian river.
G. Reynolds, O. K. creek near Dawson.
Cruickshank, at Ogilvie, on Yukon.
Small church site survey for Bishop Stringer at Carmacks.
Twenty-acre park reserve survey at Swede creek.
Sixty-acre coal location on Indian river, for the estate of E. S. Strait.

There is also ahead of me the inspection of Dickson's 1915 contract.

I attach hereto a list of twenty-two surveys filed in this office for the fiscal year ending March 31, 1915, and fourteen surveys filed in this office for the year ending March 31, 1916.

J. H. BROWNLEE
Director of Surveys.

List of Surveys Filed in the Survey Office, Dawson, Y.T., April 1, 1914, to March 31, 1915 (inc.).

Plan No.	Filed.	Class of Survey.	Surveyed for.	Locality.	Surveyor.	Remarks.
1194	April 28, 1914.	Traverse	Dominion Government	Kluane	H. G. Dickson	Bullion Base Line to Silver City.
1195	April 28, 1914.	Road	" "	"	"	Silver (Lake Kluane) to Jarvis River Sheets 1 and 2.
1196	April 28, 1914.	Mineral Claims	Donald Ross	Conrad	"	Lots, 54, 108, 124, 126, 125, 127, 128, 129 Gr. 6.
1197	April 28, 1914.	"	J. W. McLean	White River	"	Lot 24, Group 901.
1198	April 28, 1914.	"	Albert & Slaggard	"	"	Lots 2 and 3, Group 901.
1199	May 28, 1914.	"	Hamilton Yukon Mining Co.	Miles Canyon	"	Lots 199, 184, 147, Group 5.
1200	May 28, 1914.	"	M. Day	White River	"	Lots 4, 17, 18, Group 901.
1201	May 28, 1914.	"	Nicholson & Baxter	Whitehorse	"	Lots 224, 200, Group 5.
1202	May 28, 1914.	"	H. G. Blankman	White River	"	Lots 23, 21, 22, Group 901.
1203	May 28, 1914.	"	"	"	"	Lots 14, 6, 7, Group 901.
1204	June 9, 1914.	Base Line	Dominion Government	Sixtymile	F. H. Kitto	Fivemile to Boucher Creek.
1205	June 9, 1914.	Placer	M. H. Boulais	"	"	Discovery Fivemile Creek.
1206	June 9 1914.	"	Josephine Fretziak	"	C. W. Macpherson	Ck. Cl. No. 5 below mouth Fivemile Creek.
1207	Oct. 17, 1914.	Mineral Claims	Cochrane & Becker	Whitehorse	H. G. Dickson.	Lots 130 to 137 inc. Group 6, 25 miles southwest of Robinson.
1208	Dec. 1, 1914.	Placer	Yukon Gold Co	Klondike R.	C. W. Macpherson	River Cls.12 and 13 above Maris Discover
1209	Oct. 6, 1914.	Right of Way	British Yukon Railway Co.	Whitehorse	H. G. Dickson	Filed with Registrar Y.T., under No. 553 (No Field Notes received).
1210	Dec. 16, 1914.	Mineral Claim	D. C. Campbell	Whitehorse	"	Lot 227, Group 5.
1211	Dec. 17, 1914.	Group Lot	J. E. Binet	Mayo	F. H. Kitto	Lot 8, Group 12 Stewart River (No Field notes received).
1212	Dec. 17, 1914.	"	Binet, Schogrin & Chasni	Minto Bridge	"	Lots 9 and 10, Group 1054 (Amended see plan No. 1222.)
1213	Dec. 23, 1914.	Placer	Yukon Gold Co	Klondike R.	C. W. Macpherson	River Cls. 14 and 15 above Maris Disc.
1214	Dec. 31, 1914.	Group Lot	C. L. Snell	Mayo	F. H. Kitto	Lot 6 and 9, Group 12, Stewart River.
1215	Mar. 23, 1915.	Base Line	Dominion Government	Sixtymile	H. G. Dickson	Boucher to Fiftymile Creek.
1216	April , 1915.	River Traverse	Dominion Government	Sixtymile	H. G. Dickson	Fiftymile Creek to Yukon River.
1217						Pending.
1218	June , 1915.	Mineral Claims	Dr. Wm. Catto, *et al.*	Dublin Gulch	F. H. Kitto	Lots 1 to 8 inc., Group 1054.
1219	Aug. 14, 1915.	"	Agnes J. Kinsey	"	"	Lot, Group 1054.
1220	Aug. 14, 1915.	Group Lot	W. L. Jennotte	Gravel Lake	"	Lot 385, Group 2.
1221	Aug. 27, 1915.	"	D. Gadzow & I. O. Strainger.	Porcupine River	J. C. Craig	Lots 1 to 5 inc. Group 1301 (at Ram-Rampart House).
1222	Sept. 10, 1915.	"	Binet, Schogrin & Chasni	Minto Bridge	J. H. Brownlee	Lots 9 and 10 Group 1054 (Amended survey instructions by Commissioner.)
1223	Oct. 6, 1915.	Ref. Traverse	Dominion Government	Mayo River	F. H. Kitto	Road Traverse Minto Bridge to Duncan Creek.
1224	Oct. 6, 1915.	"	" "	"	"	Road traverse Minto Bridge to Mayo Townsite.

1225	Oct. 6, 1915.	Base Line	" "	Minto Creek	"	Highet Creek to Mayo River.
1226	Nov. 24, 1915.	Group Lot	Dept. Indian Affairs	Stewart River	J. H. Brownlee	Lot 10, Group 12 (Indian Reserve about one mile below Mayo River).
1227	Dec. 13, 1915.	Mineral Claim	Bear Creek Mining Co	Bear Creek	C. W. Macpherson	Lots 487 to 492, Group 2.
1228	Dec. 30, 1915.	Placer	Yukon Gold Co	"	"	Claims Nos. 2 above Discovery to 18 below, inclusive.
1229	Feb. 9, 1916.	Mineral Claims	Dixon & Johnston	Whitehorse	H. G. Dickson	Lot 172, Group 5, amended survey (see plan No. 1065).

No. 30g.

WHITEHORSE, Y.T.

This is a statement of the work done in this office during the twelve months preceding March 1, 1916, together with a brief summary of conditions in hard-rock mining in different parts of the territory.

During the above-mentioned period, 1,242 samples of rock were received for assay, and 1,572 assays or quantitative estimations were made, comprising fifteen elements.

This shows an increase of 429 samples and 511 assays over and above that of the previous twelve months, the work from the southern end of the territory alone having almost trebled.

In addition to the above, numerous qualitative determinations were made in connection with the identification of various rocks and minerals.

A detailed statement is attached to this report showing the various elements for which assays were made, and the different districts from which the samples were received.

In the Whitehorse district considerable activity in copper mining is going on, and it is expected that by the time navigation opens four copper properties will be shipping out ore to the smelter, namely the "Pueblo," "Grafter," "Copper King" and the "War Eagle." Of these, the "Pueblo" will be worked on the most extensive scale. This group was closed down shortly after the outbreak of war, but has lately been re-organized under a new company, and at the present time the shafts, which were allowed to fill up with water, are being pumped dry, and the shipping of ore will be started as soon as possible.

It is the intention of the company to ship an average of about 300 tons of ore daily, and employ from two to three hundred men. The "Grafter" copper mine has steadily been shipping ore from the 1st July, 1915. During that period over 5,000 tons of copper ore have been shipped to the smelter, averaging 7 per cent copper, and about three dollars in gold and silver per ton.

About 500 feet of prospecting drifts have bene made, and at present the diamond drill is being used to locate such bodies of ore as may be at greater depths than the present workings.

It is the intention of the company this coming summer to use the drill on adjacent undeveloped properties. This mine employs an average of thirty men.

The "Anaconda" and "Rabbit Foot" copper claims were worked for a short time last summer, and about 180 tons of ore, averaging a little over 5 per cent, shipped to the smelter.

At the present time an outside company is negotiating with the owners of these two claims with a view to leasing and bonding them. The "War Eagle" and "Copper King" properties have recently started operations and are being opened up for shipping ore.

The price of copper being now so high warrants the working of every copper property in the belt, and doubtless before the summer is over, all copper properties around Whitehorse will be working. In the Wheaton River district outside parties have bonded six of the best antimony properties, and are getting ready to ship at least 100 tons of antimony ore a month to the smelter. This deposit is said to be one of the largest known deposits of antimony ore in the world.

On the Buffalo Hump group of gold and silver mines, in the same district, local parties have taken a two years' working bond on the ground, and will shortly commence operations preparatory to shipping.

In the Conrad district, steps are also being taken to open up some of the Windy Arm properties.

In the Dawson district, the Bear Creek Mining Co., Ltd., intends working their Bear Creek quartz properties on a comparatively large scale this summer.

The company intends to install a ten-stamp modern milling plant, which is at present in Whitehorse waiting transportation having a capacity of 40 to 50 tons per twenty-four hours. The company has also received direct from the factory rock drills, air-compressors, electric motors, etc., which will be put to work as soon as possible. Considerable work has already been done on the property in the way of open-cutting, shaft sinking, tunnelling, and cross-cutting.

In the Mayo district, the Silver King mine has been having ore hauled all winter to Mayo Landing, to be shipped as soon as navigation opens to the smelter.

In conclusion, I may say that the future for hard-rock mining in the Yukon Territory has never looked brighter than at the present time, and particularly so for the Southern end, where everything points to this being a banner year.

WM. C. SIME,
Territorial Assayer.

Assays made in the Territorial Government Assay Office at Whitehorse from March 1, 1915, to March 1, 1916:—

Gold and silver	1,041
Copper	337
Lead	102
Platinum	26
Antimony	23
Zinc	9
Nickel	9
Tin	6
Molybdenum	5
Iron	4
Silica	3
Sulphur	3
Lime	2
Tungsten	1
Arsenic	1
Total	1,572

Total number of samples received, showing districts from which they were taken:—

Whitehorse	389
Dawson	197
Mayo	184
Wheaton	156
Atlin	125
Conrad	50
Dublin Gulch	47
Windy Arm	35
Pelly River	36
Kluane	19
Forty-mile	4
Total	1,242

No. 31.

REPORT OF THE TIMBER AND GRAZING LANDS BRANCH.

This is a report for the fiscal year ending the 31st March, 1916.

The revenue derived from timber, grazing lands and hay lands for the year amounted to $493,971.12, which is an increase of $90,315.91 over the revenue for the preceding year.

At the conclusion of this report will be found statement A, which sets out the total revenue of the Branch from its various sources for the year; statement B, showing the revenue from timber, by Agencies; and statement C, other sources of revenue, also by Agencies.

Statements from the Crown timber agents at Calgary, Edmonton, Prince Albert, Winnipeg, New Westminster, Kamloops, and Revelstoke, setting out the revenue collected on Dominion lands within their respective agencies, and other information, are appended hereto.

The report of the Inspector of Crown timber agencies whose headquarters are at Winnipeg, and the reports of the inspectors of ranches located at Calgary, Maple Creek, Moosejaw, Minnedosa, and Prince Albert are also attached.

The revenue derived from timber and grazing lands, received at the Crown timber agencies above mentioned, also the number of mills operated on berths held under license, and the number of portable sawmills in operation, may be summarized as follows:

Agency.	Total Revenue.	No. of mills operating under license.	No. of mills operating under permit.
	$ cts.		
Calgary	27,221 03	13	16
Edmonton	101,114 74	41	46
Prince Albert	71,391 51	18	41
Winnipeg	51,488 68	31	40
Kamloops	18,027 21	3	—
New Westminster	78,043 88	27	—
Revelstoke	20,634 99	4	—

The returns of operations received show the following quantities of building material to have been manufactured and sold under government license during the year in the timber agencies above mentioned:—

	Manufactured.	Sold.
Sawn lumber, ft. B.M	222,022,481	236,854,218
Shingles		61,000
Railway ties	85,378	61,780
Laths	33,144,867	30,301,180
Lineal feet piling		
Shingle bolts	36,143	31,192
Telegraph poles		
Fence posts	695	143,186
Cordwood	896	1,259

The following material was manufactured and sold on permit berths and portable sawmill berths:—

	Manufactured.	Sold.
Cordwood	3,712	73
Sawn lumber, ft. B.M.	13,849,153	45,265,449
Shingles	2,980,000	2,599 000
Railway ties	151,370	309,464
Lineal feet mining props	1,657,175	1,265,478
Fence posts	2,991	6,500

The quantity of lumber manufactured and sold within each agency will be found in the agents' reports appended hereto.

The area of timber lands held under license and permit in the provinces of Manitoba, Alberta, and Saskatchewan, and in the Railway Belt in the province of British Columbia, are as follows:—

Agency.	Under License.	Under Permit.
	Sq. miles.	Sq. miles.
Manitoba	1,225·26	589·87
Alberta	2,058·73	79·36
Saskatchewan	1,984·71	131·45
British Columbia	1,754·87	4·49
Totals	7,023·57	805·17

During the year eighty-seven timber berths were granted, of which one was license, forty-nine portable saw-mill, thirty-six cordwood, and one permit.

GRAZING LANDS.

There were in force on the 31st March, 1916, 3,352 grazing leases, covering a total area of 5,215,067 acres, in the provinces of Manitoba, Alberta, and Saskatchewan, and in the Railway Belt in the province of British Columbia.

	Acres.
Manitoba	34,596
Alberta	2,500,589
Saskatchewan	2,313,437
Railway Belt	366,445
Total	5,215,067

This is an increase over the previous year of 461,512 acres.
During the year there were 895 new grazing leases issued.

OFFICE WORK.

The following is a partial statement of the office work performed at Ottawa during the fiscal year:—

Letters received and recorded	26,722
" sent	39,802
Plans and sketches prepared	417
Timber berths applied for	166
Return of survey of timber berths examined and re-examined	2
Applications for grazing lands	1,435
" hay lands	18
Number of township plans on which timber berths, ranches and other reserves were plotted for agents	370
Other township plans examined for same purposes, which were clear.	842
Cash receipts issued in quadruplicate	1,794
Timber and grazing assignments registered	206
" ledger accounts kept posted	872
Fire guarding accounts kept posted	762
Total number of ranches kept posted	3,352
Seizures checked and entered	299
Timber permits entered and checked	6,573
Hay permits entered and checked	4,119
Grazing leases issued in triplicate	895
Licenses for timber berths issued in duplicate	652
License berths granted	1
Portable sawmill berths granted	49
Cordwood berths granted	36
Permit berths granted	1

B. L. YORK,
Controller.

STATEMENT "A"—Statement of Revenue for year ending March 31, 1916.

——	Timber.	Grazing.	Hay.	Registration Fees.	Fire Tax.	Improvements.	Total.
1915.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
April	30,953 71	9,029 92	23 75	4 00	985 84		40,997 22
May	28,114 38	7,966 18	2,820 85	4 00	2,151 44	131 50	41,188 35
June	29,568 40	11,156 45	1,878 20		12,786 46		55,389 51
July	28,946 50	5,808 34	1,988 80	11 00	2,057 01		38,811 65
August	32,818 37	5,733 09	617 80	2 00	1,015 37		40,186 63
September	12,506 91	6,666 92	55 10	2 00	406 47	30 00	19,667 40
October	27,605 59	7,160 12	51 60	22 36	1,361 18	15 00	36,215 85
November	42,417 15	11,314 31	12 70	2 00	285 13	25 00	54,056 29
December	34,275 64	16,410 28	9 97	26 00	4,452 51	65 00	55,239 40
1916.							
January	41,165 14	9,288 32	15 95	43 13	1,198 39	157 95	51,868 88
February	15,594 73	9,154 02	14 20	57 00	1,912 60	17 05	26,749 60
March	19,657 97	13,682 65	3 40	31 00	205 32	20 00	33,600 34
Totals	343,624 49	113,370 60	7,492 32	204 49	28,817 72	461 50	493,971 12

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STATEMENT "B."—Statement of Revenue of Timber Dues for Fiscal Year 1915-16.

Agency.	Bonus under License.	Rental under License.	Royalty under License.	Permit Fees, Dues and Rental.	Seizures.	Total.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Battleford				706 71		760 71
" Head Office						
Brandon						
" Head Office						
Calgary		2,451 77	9,103 52	1,930 39	331 67	13,817 35
" Head Office		2,403 02		66 29	10 50	2,480 21
Dauphin				527 50	191 50	719 00
" Head Office						
Edmonton	5,155 80	6,072 92	22,722 12	44,277 08	20,617 64	98,845 56
" Head Office		465 16	200 00	99 87	15 00	780 03
Estevan						
" Head Office						
Grande Prairie				384 48	138 38	522 86
" Head Office						
Grouard				445 57		445 57
" Head Office						
Humboldt				72 02	279 73	351 75
" Head Office				12 10	495 89	507 99
Kamloops		3,493 26	3,343 58	1,306 00	237 27	8,380 11
" Head Office		25 97				25 97
Lethbridge				28 70		28 70
" Head Office						
Maple Creek				86 25		86 25
" Head Office						
Medicine Hat				15 25		15 25
" Head Office						
Moosejaw				5 50		5 50
" Head Office						
New Westminster	8,057 18	12,648 59	39,364 88	14,901 85	2,136 47	77,108 97
" Head Office		912 85		21 34		934 19
Peace River				937 51		937 51
" Head Office						
Prince Albert	2,983 05	5,274 66	37,970 63	7,667 88	12,489 92	66,386 14
" Head Office		2,695 62		17 75		2,713 37
Red Deer				1,425 34	470 15	1,895 49
" Head Office						
Regina						
" Head Office						
Revelstoke		4,130 96	11,436 37	199 52	191 45	15,958 30
" Head Office		99 36				99 36
Saskatoon				13 50		13 50
" Head Office						
Swift Current				10 25		10 25
" Head Office						
Weyburn				48 50		48 50
" Head Office						
Winnipeg		9,006 20	19,057 88	14,898 75	5,223 00	48,185 83
" Head Office		307 02	64 35	5 00	1,012 79	1,389 16
Yorkton				196 86	28 00	224 86
" Head Office				25		25
	16,196 03	49,987 76	143,263 33	90,308 01	43,869 36	343,624 49

STATEMENT "C."—Statement of Revenue of Grazing, Hay, Registration Fees, Fire-Guarding Dues and Improvements for Fiscal Year 1915-16.

Agency.	Grazing.	Hay.	Registration Fees.	Fire tax.	Improvements.	Total.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Battleford	790 09	459 80				1,249 89
" Head Office	308 12	30 00				338 12
Brandon	23 50	209 30				232 80
" Head Office	43 20	20 00				63 20
Calgary	3,780 79	51 80	2 00	20 53	30 00	3,885 12
" Head Office	7,031 85	6 50				7,038 35
Dauphin	210 43	878 30				1,088 73
" Head Office	161 00	17 00				178 00
Edmonton	209 95	805 40	39 63	280 56		1,335 54
" Head Office	147 36	6 25				153 61
Estevan	96 55	23 60				120 15
" Head Office	411 32					411 32
Grande Prairie	198 06	297 60				495 66
" Head Office	142 70					142 70
Grouard	65 60	200 80				266 40
" Head Office	3 20					3 20
Humboldt	201 15	319 15				520 30
" Head Office	95 48					95 48
Kamloops	6,840 92	22 40	14 00	1,959 96		8,837 28
" Head Office	783 85					783 85
Lethbridge	2,100 57	2 30				2,102 87
" Head Office	5,672 46				120 00	5,792 46
Maple Creek	14,832 83	415 95			110 00	15,358 78
" Head Office	8,742 31					8,742 31
Medicine Hat	26,850 57	192 10	6 00			27,048 67
" Head Office	9,463 78	5 50				9,469 28
Moose Jaw	3,158 77	127 95				3,286 72
" Head Office	3,516 91	3 50			131 50	3,651 91
New Westminster	72					72
" Head Office						
Peace River	9 60					9 60
" Head Office						
Prince Albert	421 63	608 35	22 36	1,052 55		2,104 89
" Head Office	187 11					187 11
Red Deer	291 54	316 60				608 14
" Head Office	409 43	2 70			70 00	482 13
Regina	10 22	26 50				36 72
" Head Office	7 31					7 31
Revelstoke	3 20		93 00	4,481 13		4,577 33
" Head Office						
Saskatoon	136 04	275 10				411 14
" Head Office	85 68	3 00				88 68
Swift Current	6,055 91	217 40	4 00			6,277 31
" Head Office	8,517 08	25				8,517 33
Weyburn	385 06	178 20				563 26
" Head Office	238 45	1 00				239 45
Winnipeg	401 39	1,605 72	23 50	284 47		2,315 08
" Head Office	278 31					278 31
Yorkton	46 00	162 30				208 30
" Head Office	2 60					2 60
	113,370 60	7,492 32	204 49	8,079 20	461 50	129 608 11
Fire-guarding, Head Office				20,738 52		20,738 52
				28,817 72		150,346 63

No. 31a.

CALGARY, June 9, 1916.

Referring to Schedule "B," "C," and "D," in regard to the timber business of my office, you will note therefrom that very few of the berths in this district were operated during the year ending the 31st of March, last, the different operators apparently being satisfied to make use of the material on hand and to dispose of the lumber they had carried over from the previous year. For this reason, as well as owing to the fact that the country was favoured with an exceptionally good crop and good prices prevailed last season, the lumber business improved slightly, and there is no reason to anticipate lower prices during the coming summer, while there is a possibility as far as the operators in this district are concerned of a shortage in the event of there being any increased demand in the near future.

W. E. TALBOT,
Crown Timber Agent.

SCHEDULE A.—Statements of Receipts from Crown Timber Agency at Calgary for Fiscal year ending 31st March, 1916.

Month.	Bonus under License.	Ground Rent under License.	Royalty Dues under License.	Permit Fees, Dues and Rental.	Seizures.	Total Timber.	Grazing Land Rental.	Hay Permits, Fees and Dues.	Fire-guarding Fees.	Registration Fees.	Total. Fees.	Remarks.
1915.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	
April		290 30	757 87	158 23		1,206 40	204 19		20 53		1,431 12	
May		1,178 61	361 80	51 55	230 16	1,922 12	165 59	26 30			2,014 01	
June		311 15	371 25	64 40	34 70	781 50	135 99	12 50			929 99	
July		255 65	1,425 08	71 49		1,752 22	486 93	12 10			2,251 25	
August		277 15		144 37	1 00	422 22	26 04	50			449 06	
September				32 48	49 06	81 54	55 45				136 99	
October			2,800 33	89 83		2,890 16	116 02				3,006 18	
November			591 38	256 89		848 27	456 16	40			1,304 83	
December			72 00	340 39		412 39	344 54			2 00	758 93	
1916.										Improvements.		
January		60 21	2,698 11	326 83	6 00	3,091 15	876 91			30 00	3,998 06	
February				293 09		293 09	326 17				619 26	
March		78 70	25 70	100 84	10 75	215 99	586 80				802 79	
Totals		2,451 77	9,103 52	1,930 39	331 67	13,817 35	3,780 79	51 80	20 53	2 00 30 00	17,702 47	
Collected at Head Office.												
1915.												
April							826 13				826 13	
May							129 38	6 50			135 88	
June		2,367 95				2,367 95	1,907 22				4,275 17	
July							145 71				145 71	
August							42 73				42 73	
September							172 77				172 77	
October		12				12	572 31				572 43	
November					10 50	10 50	210 46				220 96	
December							2,168 12				2,168 12	

1916.														
January					66 29			66 29	211 37				277 66	
February									330 07				330 07	
March			35 35					35 35	315 58				350 93	
Totals			2,403 42		66 29	10 50		2,480 21	7,031 85	6 50			9,518 56	
Grand totals			4,855 19	9,103 52	1,996 68	342 17		16,297 56	10,812 64	58 30	20 53	2 00 30 00	27,221 03	

SCHEDULE "B"—Showing the Saw-mills operating within the Calgary, Alta., Agency, under Government License for the fiscal year ending March 31, 1916.

No.	Mill-Owner.	Location of Mill.	Berth No.	Kind of Power.	Horse Power.	Capacity per 10 hours.	Species of Timber cut.	LUMBER.			LOG COUNT.		
								Manufactured Ft. B.M.	Sold Ft. B. M.	On Hand Ft. B. M.	Logs Cut.	Logs Manufactured.	Logs on hand.
1	Eau Claire & Bow River Lumber Co.	Calgary.....	468	Steam & electric.	325	50M	Spruce.....	1,891,289	3,920,332	Nil.	Nil.	66,192	60,235
2	" "	" ..	318-E-H-J & 417 K	"	325	50M	"	Nil.	40,882	5,583,955	Nil.	Nil.	Nil.
3	The Lineham Lumber Co...	High River	579	Steam..	45	50M	"	10,680,52	5,146,501	Nil.	Nil.	22,913	Nil.
4	Frank R. Pettepher.....	Leslieville..	1,079	" ..	50	6M	Spruce and Pine....	812,555	656,358	988,944	38,871	20,884	18,874
5	Pennefather, Grant and The Great West Lumber Co..	Red Deer...	253	" ..	450	80M	"	Nil.	2,161,733	322,343	Nil.	Nil.	126,071
6	MeEwen and Carter.....	Red Deer...	1,100	" ..	450	80M	"	Nil.	653,119	Nil.	Nil.	Nil.	141,097
7	Valley Lumber Co.....	Leslieville..	1,216	" ..	35	35M	"	2,568,927	2,993,308	1,831,390	37,146	47,772	5,199
8	The Lineham Lumber Co..	High River.	1,292	" ..	45	50M	"	2,549,370	2,474,206	75,164	Nil.	47,613	48,644
9	Wm. A. Shields.....	Cremona....	1,246	" ..	30	25M	"	97,500	68,200	29,300	9,565	2,525	10,360
10	Hon. Peter McLaren.....	Blairmore..	36a	" ..	100	30M	"	Nil.	1,377,388	2,595,958	19,965	Nil.	84,248
11	Vernon N. DeMille.....	Preddis.....	1,389	" ..	35	12M	"	Nil.	Nil.	10,500	Nil.	Nil.	2,688
12	Vernon N. DeMille.....	Preddis.....	1,218	" ..	35	12M	"	Nil.	33,713	137,062	Nil.	Nil.	Nil.
13	J. A. Card and Son.....	Leslieville..	1,040	" ..	35	10M	"	194,846	161,107	67,920	Nil.	5,978	334
							Totals.....	9,182,539	19,686,847	11,642,536	105,547	213,877	497,750

SCHEDULE "B"—Showing the Saw-mills operating within the Calgary, Alta., Agency, under Government License—*Continued.*

No.	Mill-Owner.	Average per Log Ft. B. M.	Railway Ties.			Laths.			Shingles.			Number of Returns Made.	Date of Last Return.
			Manufactured.	Sold.	On hand.	Manufactured.	Sold.	On hand.	Manufactured.	Sold.	On hand.		
1	Eau Claire and Bow River Lumber Co	28·5					Nil.	Nil.				4	31–3–16
2	"						Nil.	Nil.				4	"
3	The Lincham Lumber Co	46·5					140,850	Nil.				4	"
4	Frank R. Pettepher	38·9					52,825	Nil.				4	"
5	Pennefather, Grant and The Great West Lumber Co						Nil.	Nil.				4	"
6	McEwen and Carter						45,050	3,950				4	"
7	Valley Lumber Co	53·8					Nil.	Nil.				4	"
8	The Lincham Lumber Co	53·5					Nil.	Nil.				4	"
9	Wm. A. Shields	38·6					Nil.	Nil.				4	"
10	Hon. Peter McLaren						Nil.	Nil.				4	"
11	Vernon N. DeMille						Nil.	Nil.				4	"
12	Vernon N. DeMille						Nil.	Nil.				4	"
13	J. A. Card and Son	32·59					Nil.	Nil.				4	"
	Totals						238,725	3,950				51	31–12–16

SCHEDULE " C."—Showing the Mills (including the Portable Mills) operating within the Calgary, Alta., Agency, under Government permits for the fiscal year ending March 31, 1916.

No.	Mill Owner.	Location of Mill.	Berth No.	Species of Timber Cut.	LUMBER.			LOG COUNT.			Averag per Log Ft.B.M.	No. of Returns made.	Date of Last Return
					Manufactured Ft. B. M.	Sold Ft. B. M.	On Hand Ft. B.M.	Logs Cut.	Logs Manufactured	Logs on Hand.			
1	Geo. Cummings.....	Wittenberg.	2120	Spruce and Pine.	126,630	321,267	505,989	1,956	2,049	Nil.	61·8	4	March 31, 1916.
2	J. T. Johannesen & Son	Bergen.....	2101	" ..	Nil.	167,779	82,626	100	Nil.	3,452	—	4	"
3	Chas. Stubbs.....	Rice.....	2000	" ..	80,080	82,268	193,035	Nil.	1,320	2,777	60·66	4	"
4	N. T. Hagen.....	Sundre.....	1586	" ..	Nil.	45,657	66,007	Nil.	Nil.	1,915	—	4	"
5	Foothills Lumber Co.	Furman.....	1938	Spruce, Pine and Fir.....	85,746	272,747	45,330	Nil.	2,072	3,518	41·38	4	"
6	James P. McPherson..	Bentley.....	1997	Spruce and Pine.	194,100	156,876	70,950	5,092	4,720	1,739	41·12	4	"
7	Pelletier Lumber Co..	Coleman....	Sale No. 23	" ..	515,925	666,647	Nil.	Nil.	9,932	Nil.	50·94	2	Sept. 30, 1915
8	" "	"	" 23A	" ..	697,256	641,988	55,268	29,151	17,638	26,750	39·53	4	March 31, 1916.
9	John A. Burt.....	North Fork	" 27	" ..	114,517	95,905	46,761	225	1,430	Nil.	80·08	4	"
10	Edward Mason.....	On Berth...	" 31	" ..	Nil.	20,022	16,983	1,289	Nil.	2,652	—	4	"
11	Brazeau Collieries Ltd.	Nordegg....	" 34	" ..	Nil.	Nil.	Nil.	19,026	19,026	Nil.	—	1	June 30, 1915.
12	Gus. LaCoste.....	Coleman....	" 36	" ..	Nil.	Nil.	Nil.	27,804	27,618	186	—	4	March 31, 1916.
13	Brazeau Collieries Ltd.	Nordegg....	" 16	" ..	404,083	369,530	36,895	85,476	72,004	13,723	23·3	4	"
14	Henry A. Hansen and Carl Hermanson....	Walsh.....	" 37	" ..	78,581	64,434	14,147	6,250	2,726	3,524	28·82	4	"
15	Ernest R. Baker.....	On Berth...	Berth No. 2295.....	" ..	Nil.	Nil.	Nil.	2,741	Nil.	2,741	—	1	"
16	Ernest R. Baker.....	"	Berth No. 2195.....	" ..	116,920	116,920	Nil.	Nil.	2,438	Nil.	68·47	1	June 30th, 1915.
					2,413,838	3,022,040	1,133,991	179,710	162,973	62,977	31·65	53	

B. M. Contents of Mining Timber cut on Sale No. 16 included in log average.
1 191078 lin. feet Mine Props Mfgd. and used. 1 192992 lin. feet Mine Props Mfgd. 1 190016 lin. feet Mine Props sold.
1 1273105 ft. B. M. Mining Timber Mfgd. 1075452 ft. B. M. Mining Timber sold. 1 13608 lin. feet Bldg. logs cut and sold.

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SCHEDULE "D."—General Office Return of the Crown Timber Agency, Calgary, Alta., for fiscal year ending March 31, 1916.

Particulars.	Number, etc.	As compared with previous year. — Increase.	As compared with previous year. — Decrease.	Remarks.
Letters received	100,228		11,037	Letters of all Branches.
Letters written	67,596		24,737	" "
Permits subject to dues issued	69		10	Including 35 Forestry Permits.
Free permits issued	171		63	Including 58 Forestry Permits.
Seizures made	24		9	Including 12 Forestry Seizures.
Mill returns received and verified	234	15		
Mills operating under government license	13		3	
Mills operating under government permits	16		1	
Quantity of lumber manufactured, under license	9,182,539		9,270,663	
Quantity of lumber sold, under license	19,686,847	5,317,916		
Quantity of lumber on hand, under license	11,642,536		10,505,320	
Hay permits issued	806	466		Including 757 School lands and 14 Forestry Permits

No. 31b.

EDMONTON, ALTA., May 29, 1916.

The revenue received during the past year is almost double that of the previous year, and is entirely due to the demand for lumber. The sales from licensed berths exceeded those of the year before by 10,787,393 feet board measure.

Portable saw-mills doing customs sawing for settlers manufactured 19,276,097 feet b.m. and 3,244 lineal feet of sided timber. Ninety-eight mill books were received and checked. There was a considerable improvement over previous years in the manner in which saw-mill men kept their records.

Railway timber operations have been very extensive. A large number of ties have been taken out by the Canadian Northern, Edmonton, Dunvegan & B.B., Canada Central and Alberta & Great Waterways Railways. The operations have been satisfactory, and I am indebted to the officials of these railways for the able assistance which they have given me.

The new hay regulations which came into force during the year proved very satisfactory. The issuing of permits for not more than a quarter-section increased the number of permits issued but very much simplified the handling of several applications on one quarter-section, and was much more easily understood by the settlers. I would recommend that the permit fee be changed to 25 cents as I think the charge of 50 cents works a hardship on the settler who has to take out several permits instead of one permit as formerly.

This year bids fair to eclipse all past years in revenue derived from timber.

A. NORQUAY,
Crown Timber Agent.

SCHEDULE A.—Statement of Receipts from Crown Timber Agency at Edmonton for the Fiscal year ending March 31, 1916.

Month.	Bonds under License.	Ground Rent under License.	Royalty Dues under License.	Permit Fees, Dues and Rental.	Seizures.	Total Timber.	Grazing Land Rental.	Hay Permits, Fees, and Dues.	Fireguarding Fees.	Registration Fees.	Total.
1915.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
April		363 35	443 40	4,582 57	42 25	5,431 57	13 95	2 50			5,448 02
May	1,523 01	29,34 32	186 44	1,308 81	133 72	6,086 30	6 40	484 55	25 36		6,602 61
June		462 86	3 22	12,046 98	1,832 67	14,345 73	16 77	115 10	25 78		14,503 38
July	1,800 00	25 97	1,251 55	1,462 05	9 00	4,548 57	43 99	141 70			4,734 26
August		15 54	500 00	13,869 46	6,412 97	20,797 97	9 79	43 05	1 99		20,852 80
September		08	496 34	1,709 10	17 35	2,222 87	7 30	13 60			2,243 77
October		601 11	1,607 44	1,349 99	3,660 61	7,219 15	12 31	60	155 19		7,387 25
November		1 25	5,980 63	1,850 19	8,093 96	15,926 03	43 56	3 20			15,972 79
December	1,832 79	210 53	7,302 36	2,310 79	155 32	11,811 79	16 50	70	2 24	18 00	11,849 23
1916.											
January		150 26	2,571 21	2,244 48	78 48	5,044 43	2 23	20		21 63	5,068 49
February			1,517 19	842 37	18 62	2,378 18	14,02	20			2,392 40
March		1,307 65	862 34	700 29	162 69	3,032 97	23 13		70 00		3,126 10
Totals	5,155 80	6,072 92	22,722 12	44,277 08	20,617 64	98,845 56	209 95	805 40	280 56	39 63	100,181 10
Collected at Head Office.											
1915.											
April											
May				17 52	15 00	32 52					32 52
June		314 30				314 30	15 66				329 96
July							3 91				3 91
August		1 00				1 00	11 20				12 20
September							29 00				29 00
October				82 10		82 10	6 40				88 50
November							67 28				67 28
December							1 08				1 08
1916.											
January				25		25	3 21	5 25			8 71
February		118 50				118 50	01				118 51
March		31 36	200 00			231 36	9 61	1 00			241 97
Totals		465 16	200 00	99 87	15 00	780 03	147 36	6 25			933 64
Grand Totals	5,155 80	6,538 08	22,922 12	44,376 95	20,632 64	99,625 59	357 31	811 65	280 56	39 63	101,114 74

SCHEDULE "B."—Showing the Saw-mills operating within the Edmonton Agency under Government License for the fiscal year ending March 31, 1916.

No.	Mill Owner.	Location of Mill.	Berth No.	Species of Timber Cut.	Lumber.			Log Count.		
					Manufactured. Ft. B. M.	Sold Ft. B. M.	On hand Ft. B. M.	Logs Cut.	Logs Manufactured.	Logs on Hand.
1	Chas. Cropley	Berth	302	Spruce, poplar	Nil.	Nil.	Nil.	Nil.	Nil.	813—
2	John Walter	Edmonton	887	"	25	25	Nil.	Nil.	837	Nil.
3	John Walter	"	956	"	2,125	2,125	Nil.	93	59	34
4	D. R. Fraser & Co., Ltd.	"	956	"	506	506	Nil.	19	20	3
5	Edmonton Lumber Co., Ltd	"	963	"	1,733	1,733	Nil.	Nil.	7,048	7
6	John Walter Limited	"	1,008	"	Nil.	Nil.	Nil.	Nil.	1,005	5
7	D. R. Fraser & Co., Ltd.	"	1,008	"	2,850	305,480	1,050,684	Nil.	19,512	25
8	Blain & McKelvey	Berth	1,019	"	Nil.	164,467	276,151	Nil.	Nil.	Nil.
9	Bell & McPhee	"	1,919	"	75,000	75,000	Nil.	Nil.	1,050	1,462
10	J. D. McArthur	Edmonton	2,051	"	1,323,944	1,323,944	Nil.	12,230	12,230	Nil.
11	Phoenix Lumber Co., Ltd.	Ernsted	1,094	"	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.
12	Wm. C. McLellan	Berth	1296 Blk. 1	Tamarack, pine	411,177	747,409	61,241	Nil.	6,576	15,280
13	Phoenix Lumber Co., Ltd.	Ernsted	1,093	Spruce, pine	Nil.	1,482,267	989,171	Nil.	Nil.	Nil.
14	Phoenix Lumber Co., Ltd.	"	1,122	Spruce, poplar	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.
15	Edmonton Lumber Co., Ltd	Edmonton	1,125	"	3,904	903,648	1,882,065	Nil.	30,769	27
16	Edmonton Lumber Co., Ltd	"	1,156	"	378	378	Nil.	Nil.	10,994	3
17	D. R. Fraser & Co., Ltd.	"	1,160	"	725	725	Nil.	Nil.	3,010	Nil.
18	J. J. Anderson	Berth	1,185	"	Nil.	20,780	200,902	500	Nil.	500
19	Edmonton Lumber Co., Ltd	Edmonton	1,202	"	Nil.	496,000	Nil.	Nil.	Nil.	Nil.
20	John Walter Limited	"	1,211	"	174	174	Nil.	Nil.	21,203	1
21	D. R. Fraser & Co., Ltd.	"	1,211	"	240	240	Nil.	Nil.	1,600	Nil.
22	J. Stewart	Athabasca	2,150	"	676,156	636,665	39,491	30,678	11,680	31,611
23	John Walter Limited	Edmonton	1,242	"	4,423	1,434,331	Nil.	Nil.	6,458	27
24	D. R. Fraser & Co.	"	1,242	"	2,861	541,346	Nil.	Nil.	556	6
25	Blain & McKelvey	Berth	1,273	"	124,960	22,642	102,318	Nil.	3,124	Nil.
26	The Jasper Park Co., Ltd.	"	1,279	"	Nil.	509,445	1,505,652	Nil.	Nil.	Nil.
27	John Walter	Edmonton	1,289	"	Nil.	Nil.	Nil.	Nil.	10,685	Nil.
28	Richard Stewart	Berth	2,072	"	Nil.	Nil.	Nil.	130,607	Nil.	135,607
29	Fred. Meyer	Clyde	1,301	"	97,437	83,116	58,570	Nil.	1,523	Nil.
30	Jno. R. McIntosh	Berth	1,320	"	Nil.	Nil.	440,141	Nil.	Nil.	4,014
31	A. Belcher	"	1,330	"	1,582,443	1,255,428	471,273	Nil.	41,735	5,126
32	A. Belcher	"	1,331	"	Nil.	Nil.	1,801,967	Nil.	Nil.	9,874
33	Northwest Lumber Co., Ltd.	Edmonton	1,340	"	Nil.	703,850	Nil.	Nil.	Nil.	Nil.
34	W. H. Gibson	Berth	1,343	"	886,462	875,914	126,762	30,906	32,254	3,816
35	John Walter	Edmonton	1,353	"	Nil.	Nil.	Nil.	Nil.	1,182	Nil.
36	Lawrence Garneau	St Paul des Métis	1,172	"	Nil.	295,063	427,004	Nil.	Nil.	2,353

SCHEDULE "B."—Showing the Saw-mills operating within the Edmonton Agency under Government License for the fiscal year ending March 31, 1916—*Continued.*

No.	Mill-Owner.	Average per Log Ft. B. M.	Railway Ties.			Laths.			Shingles.			Number of Returns made.	Date of Last Return.
			Manufactured.	Sold.	On hand.	Manufactured.	Sold.	On hand.	Manufactured.	Sold.	On hand.		
1	Chas. Cropley											3	31-12-15
2	John Walter											1	"
3	John Walter											1	"
4	D. R. Fraser & Co., Ltd											1	"
5	Edmonton Lumber Co., Ltd											1	"
6	John Walter Limited											1	"
7	D. R. Fraser & Co., Ltd					Nil.	667,455	774,280				1	"
8	Blain & McKelvey					Nil.	13,250	40,250				1	30-6-15
9	Bell & McPhee	71										3	31-12-15
10	J. D. McArthur	108				243,965	243,965	Nil.				4	31-3-16
11	Phoenix Lumber Co., Ltd		45,000	Nil.	45,000							4	31-3-16
12	Wm. C. McLellan	63										2	30-9-15
13	Phoenix Lumber Co., Ltd					Nil.	214,250	158,350				4	31-3-16
14	Phoenix Lumber Co., Ltd		28,678	50,080	20,000							4	"
15	Edmonton Lumber Co., Ltd					Nil.	272,000	35,150				1	31-12-15
16	Edmonton Lumber Co., Ltd											1	"
17	D. R. Fraser & Co., Ltd											1	"
18	J. J. Anderson											3	"
19	Edmonton Lumber Co., Ltd											3	31-12-15
20	John Walter Limited											1	"
21	D. R. Fraser & Co., Ltd											1	"
22	J. Stewart	58										4	31-3-16
23	John Walter Limited					Nil.	25,000	Nil.				1	31-12-15
24	D. R. Fraser & Co., Ltd											1	"
25	Blain & McKelvey	40										2	30-9-15
26	The Jasper Park Co., Ltd											4	31-3-16
27	John Walter											1	31-12-15
28	Richard Stewart											1	31-3-16
29	Fred. Meyer	64											"
30	Jno. R. McIntosh					Nil.	Nil.	19,550				4	31-12-14
31	A. Belcher	38										4	31-3-16
32	A. Belcher											4	"
33	Northwest Lumber Co., Ltd											4	"
34	W. H. Gibson	27										4	"
35	John Walter											1	31-12-15
36	Lawrence Gauneau								Nil.	Nil.	22,000	3	"

SCHEDULE "B."—Showing the Saw-mills operating within the Edmonton Agency under Government License for the fiscal year ending March 31, 1916—*Continued.*

No.	Mill Owner.	Location of Mill.	Berth No.	Species of Timber Cut.	Lumber.			Log Count.		
					Manufactured. Ft. B. M.	Sold Ft. B.M.	On hand Ft. B. M.	Logs Cut.	Logs Manufactured.	Logs on Hand.
37	A. D. Henderson	Berth	1,368	"	5,000	5,000	Nil.	Nil.	Nil.	Nil.
38	J. D. McArthur	Edmonton	1,379	"	533,334	179,803	353,531	129,600	7,459	122,141
39	J. D. McArthur	"	2,161	"	10,063,168	10,326,319	661,608	101,406	101,406	Nil.
40	D. J. Dunn	Berth	1,394	"	Nil.	74,190	95,936	Nil.	Nil.	Nil.
41	John Walter Limited	Unmarked logs		"	4,805	4,805	Nil.	508	200	308
42	John Walter Limited	"	1,784	"	4,130	1,759,574	577,097	Nil.	5,948	22
	Totals				15,807,960	24,232,392	11,121,564	436,547	340,123	333,065

(1)	Piling manufactured	1,600
	Piling sold	33,060
(2)	Mine props and ties manufactured	64
	Mine props and ties sold	38,232

SCHEDULE "B."—Showing the Saw-mills operating within the Edmonton Agency under Government License for the fiscal year ending March 31, 1916—*Concluded.*

No.	Mill Owner.	Average per Log Ft. B. M.	Railway Ties.			Laths.			Shingles.			Number of Returns made.	Date of Last Return.
			Manufactured.	Sold.	On hand.	Manufactured.	Sold.	On hand.	Manufactured.	Sold.	On hand.		
37	A. D. Henderson											4	31-3-16
38	J. D. McArthur	71				115,000	Nil.	115,000				4	"
39	J. D. McArthur	99				1,990,450	1,990,450	Nil.				1	"
40	D. J. Dunn											5	"
41	John Walter Limited											1	31-12-15
42	John Walter Limited					Nil.	756,125	Nil.				1	"
	Totlas		73,678	50,080	65,000	2,349,415	4,182,495	1,142,580			22,000		

SCHEDULE "C."—Showing the Mills (including the Portable Mills) operating within the Edmonton Agency, under Government Permits, for the fiscal year ending March 31, 1916.

No.	Mill-Owner.	Location of Mill.	Berth No.	Species of Timber Cut.	LUMBER.			LOG COUNT.		
					Manufactured Ft. B. M.	Sold Ft. B. M.	On hand Ft. B. M.	Logs Cut.	Logs Manufactured.	Logs on Hand.
			O–in–C							
1	John Walter Ltd	Edmonton	1,306 22/11/06	Spruce, poplar	3,198	3,087,059	1,296,470	Nil	26,068	12
	D. R. Fraser & Co., Ltd	"	1,306 22/11/06	"	2,822	1,672,112	Nil	Nil	8,648	10
	John Walter, Ltd	"	Spec. O–in–C	"						
			10/7/07	"	359	2,065	Nil	Nil	15,574	Nil
4	John Walter, Ltd	"	140,029	"	660	4,688	Nil	Nil	6,358	1
5	John Walter, Ltd	"	T.B. 1,477	"	Nil	Nil	Nil	Nil	1,023	Nil
	D. R. Fraser & Co., Ltd	"	Pt. 148,090	"	Nil	1,110	Nil	Nil	310	Nil
	John Walter, Ltd	"	Pt. 148,090	"	3,099	343,663	Nil	Nil	16,671	10
	John Walter, Ltd	"	T.B. 1,493	"	Nil	94	Nil	Nil	1,023	Nil
9	John Walter, Ltd	"	T.B. 1,497	"	Nil	640	Nil	Nil	14,615	Nil
10	John Walter, Ltd	"	T.B. 1,486	"	Nil	Nil	Nil	Nil	1,891	Nil
11	D. R. Fraser & Co., Ltd	"	Pt. 140,029	"	Nil	Nil	Nil	Nil	526	Nil
12	John Walter, Ltd	"	T.B. 1,487	"	20	797	Nil	Nil	5,330	1
13	Emile Barril	Rife	T.B. 1,773	"	Nil	64,879	69,210	Nil	Nil	Nil
14	J. B. Scofield	Downing	T.B. 1,792	"	22,261	24,287	16,310	Nil	584	2,855
15	John Zackonski	Westlock	T.B. 1,879	"	Nil	48,362	265,773	Nil	Nil	Nil
16	Fred. Meyer	Clyde	T.B. 1,881	Spruce, tamarack	Nil	61,944	Nil	Nil	Nil	Nil
17	Perry Snyder	Pakan	T.B. 1,885	Spruce, poplar	Nil	10,797	76,222	Nil	Nil	Nil
18	P. Maisonneuve	Rich Valley	T.B. 1,902	"	Nil	209,137	79,590	Nil	Nil	Nil
19	Chas. M. Mearns	Grouard	T.B. 1,921	Spruce, tamarack	Nil	11,608	35,781	Nil	Nil	Nil
20	A. W. DeH. Smith	Paddle River	T.B. 1,926	Spruce, etc	Nil	8,850	Nil	Nil	131	452
21	Athab. Lbr. & Sup. Co	Athabasca	T.B. 1,936	Spruce	Nil	67,402	Nil	Nil	Nil	Ni.
22	Wm. Brunelle	St. Paul des Métis	T.B. 1,937	Spruce, pine	13,240	240,639	353,303	Nil	275	Nil
23	Jas. A. Evans	Lake Saskatoon	T.B. 1,993	Spruce, etc	714,494	683,055	31,439	Nil	13,497	Nil
24	C. H. Ohrn	Calmar	T.B. 1,995	"	Nil	109,179	Nil	Nil	Nil	Nil
25	Warasse Dery	Bonnyville	T.B. 1,996	"	Nil	62,260	50,831	Nil	Nil	Nil
26	Gibbons & Brown	Grouard	T.B. 2,013	"	Nil	Nil	Nil	Nil	114	Nil
27	F. Le Serrec	Peace river C.	T.B. 2,037	Spruce, tamarack	Nil	22,755	Nil	Nil	Nil	Nil
28	Ft. McMurray Lbr. Co	F. McMurray	T.B. 2,039	Spruce, etc	Nil	4,390	Nil	Nil	Nil	Nil
29	Peace River Lbr. Co	Shaftesbury	T.B. 2,047	"	7,550	53,968	Nil	Nil	Nil	Nil
30	St. Bernard Mission	Grouard	T.B. 2,053	"	Nil	27,529	857	Nil	100	2,208
31	Geo. Latimer	Edmonton	T.B. 2,057	"	Nil	91,465	Nil	Nil	Nil	Nil
32	H. A. George	Peace river C.	T.B. 2,094	"	25,000	365,161	Nil	6,285	330	5,955

SCHEDULE "C."—Showing the Mills (including the Portable Mills) operating within the Edmonton Agency, under Government Permits, for the fiscal year ending March 31, 1916—*Continued.*

No.	Mill-Owner.	Average per Log Ft. B. M.	Railway Ties.			Shingles.			No. of Returns Made.	Date of Last Return.
			Manufactured.	Sold.	On hand.	Manufactured.	Sold.	On hand.		
1	John Walter, Ltd								1	31-12-15
2	D. R. Fraser & Co., Ltd								1	"
3	John Walter, Ltd								1	"
4	John Walter, Ltd								1	"
5	John Walter, Ltd								1	"
6	D. R. Fraser & Co., Ltd								1	"
7	John Walter, Ltd		1,420	761	2,840				1	"
8	John Walter, Ltd								1	"
9	John Walter, Ltd								1	"
10	John Walter, Ltd								1	"
11	D. R. Fraser & Co., Ltd								1	"
12	John Walter Ltd								1	"
13	Emile Barril								4	31-3-16
14	J. B. Seofield	39				26,000	26,000		3	31-12-15
15	John Zaekonski								4	31-3-16
16	Fred. Meyer								2	31-9-15
17	Perry Snyder								3	31-12-15
18	P. Maisonneuve								4	31-3-16
19	Chas. M. Mearns					Nil	9,250		4	31-3-16
20	A. W. DeH. Smith								4	31-3-16
21	Athab. Lbr. & Sup. Co								1	31-12-15
22	Wm. Brunelle	48				Nil	182,750		4	31-3-16
23	Jas. A. Evans	53				1,819,750	1,153,500		4	31-3-16
24	C. H. Ohrn								4	31-3-16
25	Warnasse Dery								3	31-12-15
26	Gibbons & Brown								1	30-6-15
27	F. Le Serrec								2	31-3-16
28	Ft. McMurray Lbr. Co								1	30-6-15
29	Peace River Lbr. Co								1	30-6-15
30	St. Bernard Mission					Nil	17,000		4	31-3-16
31	Geo. Latimer								1	30-6-15
32	H. A. George	76							4	31-3-16

SCHEDULE "C."—Showing the Mills (including the Portable Mills) operating within the Edmonton Agency, under Government Permits, for the fiscal year ending March 31, 1916—*Continued.*

No.	Mill Owner.	Location of Mill.	Berth No.	Species of Timber Cut.	Lumber.			Log Count.		
					Manufactured. Ft. B. M.	Sold Ft. B. M.	On hand Ft. B. M.	Logs Cut.	Logs Manufactured.	Logs on Hand.
33	Hy. Roberts	Greencourt	T.B. 2,098	"	25,000	66,214	15,583	Nil	400	1,600
34	Louis Lagasse	Westlock	T.B. 2,115	"	Nil	60,043	Nil	Nil	Nil	Nil
35	Henry Clemes	Barr Head	T.B. 2,116	"	51,621	253,689	Nil	Nil	700	N
36	The Argonauts Ltd	Grande Prair.	T.B. 2,136	"	379,819	462,684	134,474	Nil	10,270	Nil
37	Geo. C. Garrett	Spirit river	T.B. 2,144	"	241,488	241,488	Nil	Nil	4,333	Nil
38	Thos. E. Cooke	Grande Prair.	T.B. 2,145	"	30,000	303,257	150,590	900	900	Nil
39	F. J. Dodge	Blue Sky	T.B. 2,146	"	195,102	92,625	127,464	90	3,367	1,613
40	Magar & St. Germain	Peace river C.	T.B. 2,151	"	149,746	220,821	13,992	Nil	1,729	204
41	A. G. Trelle	Lake Saskat.	T.B. 2,156	"	89,826	87,776	17,002	57	1,077	431
42	Walter Food	Peace river C.	T.B. 2,163	"	Nil	Nil	Nil	1,000	1,000	Nil
43	A. E. Drader	Lacombe	T.B. 2,160	"	Nil	83,067	141,407	Nil	Nil	Nil
44	Ralph Harris	Peace river C.	T.B. 2,164	"	Nil	Nil	Nil	Nil	Nil	Nil
45	The Hudson's Bay Co	Edmonton	T.B. 2,172	"	Nil	20,028	31,594	Nil	Nil	Nil
46	G. A. McPherson	High Prairie	T.B. 2,165	"	90,000	76,632	18,831	Nil	900	Nil

SCHEDULE "C."—Showing the Mills (including the Portable Mills) operating within the Edmonton Agency, under Government Permits, for the fiscal year ending March 31, 1916—*Continued.*

No.	Mill Owner.	Average per Log Ft. B. M.	Railway Ties.			Shingles.			No. of Returns Made.	Date of Last Return.
			Manufactured.	Sold.	On hand.	Manufactured.	Sold.	On hand.		
33	Hy. Roberts	60							3	31–12–16
34	Louis Lagasse								4	31–3–15
35	Henry Clemes	74							4	31–3–16
36	The Argonauts Ltd	37				231,500	287,500		4	31–3–16
37	Geo. C. Garrett	56				240,750	281,000		4	31–3–16
38	Thos. E. Cooke	33							4	31–3–16
39	F. J. Dodge	58				26,750	26,750		4	31–3–16
40	Magar & St. Germain	86				29,250	29,250		4	31–3–16
41	A. G. Trelle	83							4	31–3–16
42	Walter Food								1	30–6–15
43	A. E. Drader								3	31–12–15
44	Ralph Harris								3	31–12–15
45	The Hudson's Bay Co								4	31–3–16
46	G. A. McPherson	100							4	31–3–16

SCHEDULE "C."—Showing the Mills (including the Portable Mills) operating within the Edmonton Agency, under Government Permits, for the fiscal year ending March 31, 1916—*Continued.*

No.	Mill Owner.	Location of Mill.	Berth No.	Species of Timber Cut.	Lumber.			Log Count.		
					Manufactured. Ft. B. M.	Sold Ft. B. M.	On Hand Ft. B. M.	Logs Cut.	Logs Manufactured.	Logs on Hand.
1	C. E. Hughes	Saddle Lake	T.B. 2238	Spruce, etc	144,606	144,606	Nil	300	3,330	300
2	A. Tupper & R. C. Dandson	Athabasca	T.B. 2178	"	1,100	1,100	Nil	Nil	20	Nil
3	W. A. Berry	Ft. Saskat	T.B. 2175	"	401,000	131,191	280,309	9,767	4,996	6,000
4	Wm. Brunelle	St. Paul des Metis	T.B. 2170	"	605,518	Nil	605,518	Nil	13,877	Nil
5	I. B. Oldham	Lake Saskatoon	T.B. 2205	"	268,968	243,968	25,000	4,420	3,820	2,000
6	Mrs. L. Harrison	Swan River Settlet	T.B. 2167	"	32,000	45,254	43,664	700	600	100
7	Wm. S. O. English	Spirit River	T.B. 2190	"	224,685	224,685	Nil	Nil	6,000	Nil
8	H. C. Mortlett	Lunnford	T.B. 2183	"	Nil	8,000	Nil.	Nil	Nil	Nil
9	John Zorckpwski	Westlock	T.B. 2219	"	257,130	21,000	236,130	8,007	7,598	409
10	Jos. E. Bellemore	Bonnyville	T.B. 2192	"	Nil	Nil	91,435	Nil	Nil	667
11	Emile Baril	Durlingville	T.B. 2184	"	Nil	Nil	228,000	Nil	300	Nil
12	O. S. Radway	Radway Centre	T.B. 2180	"	125,000	2,800	149,504	1,300	1,300	Nil
13	Ray Varin	Plamondonville	T.B. 2191	"	115,856	91,048	24,808	5,353	1,053	4,300
14	David Graham	Marsden, Sask	T.B. 2220	"	84,623	77,423	7,200	1,100	1,100	Nil
15	Smith & Van Camp	Beaver Crossing	T.B. 2209	"	135,500	102,686	32,814	1,235	1,235	Nil
16	C. H. Ohrn	Calmar	T.B. 2212	"	Nil	Nil	Nil	Nil	Nil	Nil
17	J. H. Harris & Sons	Grande Prairie	T.B. 2216	"	57,519	44,420	13,099	997	997	Nil
18	Tupper & Davidson	Athabasca	T.B. 2218	"	26,450	24,250	2,000	350	350	Nil
19	Webber & Lee	Edmonton	T.B. 2221	"	Nil	Nil	Nil	Nil	Nil	Nil
20	Ft. McMurray Mer. Co	Ft. McMurray	T.B. 2230	"	114,000	82,086	31,914	No count	of logs.	
21	J. E. VanHorne	Lake Saskatoon	T.B. 2211	"	172,982	172,982	Nil	3,210	3,210	Nil
22	J. P. Lindquist	Glenevis	T.B. 2247	"	49 800	49,800	Nil	5,980	5,980	Nil.
23	Geo. Magar	P. R. Crossing	T.B. 2276	"	325,745	294,587	31,158	3,947	3,947	Nil
24	Wm. Compie	Wahstao	T.B. 2223	"	19,460	8,074	11,386	830	540	290
25	Michael Blasuis	Entwistle	T.B. 2227	"	27,846	19,030	8,816	110	337	98

SCHEDULE "C"—Showing the Mills (including the Portable Mills) operating within the Edmonton Agency, under Government Permits, for the Fiscal Year ending March 31, 1916—*Continued.*

No.	Mill Owner.	Average per log. Ft. B. M.	Railway Ties.			Number of Returns made.	Date of Last Return.	Shingles.	
			Manufactured.	Sold.	On hand.			Manufactured.	Sold.
1	C. E. Hughes	44				3	31-12-15		
2	A. Tupper & R. C. Dandson	55				1	30-6-15		
3	W. A. Berry	80				4	31-3-15		
4	Wm. Brunelle	44				4	31-3-16	355,000	355,000
5	I. B. Oldham	70				3	31-3-16		
6	Mrs. L. Harrison	53				4	31-3-16		
7	Wm. S. O. English	37				2	30-9-15	36,500	36,500
8	H. C. Mortlett					4	31-3-16		
9	John Zorekpwski	34				4	31-6-16		
10	Jos. E. Bellemore					1	30-6-15		
11	Emile Baril					3	31-12-15	122,000	102,000
12	O. S. Radway	96				4	31-3-16		
13	Ray Varin	110				4	31-3-16		
14	David Graham	77				2	30-9-16	42,500	42,500
15	Smith & Van Camp	109				4	31-3-16		
16	C. H. Ohrn					4	31-3-16		
17	J. H. Harris & Sons	58				4	31-3-16		
18	Tupper & Davidson	75				3	31-3-16		
19	Webber & Lee					2	31-12-15		
20	Ft. McMurray Mer. Co					2	31-12-15		
21	J. E. Van Horne	54				3	31-3-16		
22	J. P. Lindquist	Lin. ft.				2	31-3-16		
23	Geo. Magar	83				2	31-3-16		
24	Wm. Compie	36				1	31-12-15		
25	Michael Blasuis	83				2	31-3-16		

SCHEDULE "C"—Showing the Mills (including the Portable Mills) operating within the Edmonton Agency, under Government Permits, for the Fiscal Year ending March 31, 1916—*Continued.*

No.	Mill Owner.	Location of Mill.	Berth No.	Species of Timber Cut.	Lumber.			Log Count.		
					Manufactured. Ft. B. M.	Sold Ft. B. M.	On hand Ft. B.M.	Logs Cut.	Logs Manufactured.	Logs on Hand.
26	Spirit River Lbr. Co.	Spirit River	T.B. 2243	Spruce, etc.	609,729	262,591	347,138	9,044	9,044	Nil
27	F. P. Paradis	Lac LaBiche	T.B. 2232	"	147,173	112,173	35,000	2,800	1,600	1,200
28	Whitford Bros.	Pakan	T.B. 2280	"	Nil	Nil	Nil	Nil	Nil	Nil
29	C. T. Nelson	Edmonton	T.B. 2263	"	Nil	Nil	Nil	5,211	Nil	5,211
30	P. A. Robb	Edson	T.B. 2264	"	Nil	Nil	Nil	Nil	Nil	Nil
31	J. P. Baril	Therien	T.B. 2225	"	Nil	Nil	Nil	Nil	Nil	Nil
32	Geo. C. Garnett	Spirit River	T.B. 2263	"	73,218	73,218	Nil	9,962	1,432	8,530
33	The Argonauts Ltd.	Grande Prairie	T.B. 2252	"	51,764	20,066	31,698	13,694	1,258	12,436
34	Henry Clemes	Barr Head	T.B. 2291	"	185,578	96,546	89,032	5,117	2,953	2,164
35	J. E. VanHorne	Lake Saskatoon	T.B. 2256	"	Nil	Nil	Nil	2,710	Nil	2,710
36	George Lbr. Co.	Peace River Crossing	T.B. 2270	"	Nil	Nil	Nil	1,500	Nil	1,500
					6,302,555	11,601,803	5,252,346	105,976	214,621	63,267

SCHEDULE "C"—Showing the Mills (including the Portable Mills) operating within the Edmonton Agency, under Government Permits, for the Fiscal Year ending March 31, 1916—*Concluded.*

No.	Mill Owner.	Average per log Ft. B. M.	Railway Ties.			Number of Returns made.	Date of Last Return.	Shingles.	
			Manufactured.	Sold.	On hand.			Manufactured.	Sold.
26	Spirit River Lbr. Co.	67				2	31-3-16	50,000	50,000
27	F. P. Paradis	92				1	31-12-15		
28	Whitford Bros.					1	31-3-16		
29	C. T. Nelson					1	31-3-16		
30	P. A. Robb					1	31-3-16		
31	J. P. Baril					1	31-12-15		
32	Geo. G. Garnett	51				1	31-3-16		
33	The Argonauts Ltd.	41				2	31-3-16		
34	Henry Clemes	63				1	31-3-16		
35	J. E. VanHorne					1	31-3-16		
36	George Lbr. Co.					1	31-3-16		
		2,315 64 ft. average.	1,420	761	2,840			2,980,000	2,599,000

SCHEDULE "D."—General Office Return of the Crown Timber Agency, Edmonton, for Fiscal Year ending March 31, 1916.

Particulars.	Number, etc.	As compared with previous year. — Increase.	As compared with previous year. — Decrease.	Remarks.
Letters received	36,124			These figures are only approximate, as no separate count kept.
Letters written	50,124			Increase over previous year.
Permits subject to dues issued	318		156	
Free permits issued	1,094		761	
Seizures made	101	23		
Mill returns received and verified	301		285	
Mills operating under government license	16		4	
Mills operating under government permits	68	10		
Quantity of lumber manufactured under license	15,807,960	3,197,362		
Quantity of lumber sold, under license	24,232,392	10,787,393		
Quantity of lumber on hand, under license	11,121,564	6,700,996		
Hay permits issued	570	123		Increase in hay permits due to new regulations.

PRINCE ALBERT.

While the total revenue last year was only $39,321.73, for the corresponding period, this year it has reached the sum of $68,490.78. The increase in the total output of lumber manufactured and sold by saw-mills operating under government license during the fiscal year just closed, is very marked, there being 72,557,328 feet b.m. manufactured and 87,861,178 feet b.m. disposed of, which shows an excess over the previous year of 22,750,072 feet and 44,054,794 feet, respectively.

The lumber sold found a ready market in the prairie section of the western provinces and the United States.

D. J. ROSE,

Crown Timber Agent.

SCHEDULE A.—Statement of Receipts from Crown Timber Agency at Prince Albert for Fiscal Year ending March 31, 1916.

Month.	Bonus under License.	Ground Rent under License.	Royalty Dues under License.	Permit Fees, Dues and Rental.	Seizures.	Total Timber.	Grazing Land Rental.	Hay Permits, Fees and Dues.	Fire-guarding Fees.	Registration Fees.	Total.
1915.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
April		3,273 76	3,054 64	755 09	1,025 23	8,108 72	22 15	2 50	42 93		8,176 30
May		470 80		1,882 10	2,190 33	4,543 23	20 00	244 40			4,807 63
June		193 80	4 71	94 03	1,094 24	1,386 78	63 85	99 30	487 45		2,037 38
July			6,889 50	669 87	2,037 50	9,596 87	27 14	177 65			9,801 66
August				61 55	4,357 58	4,419 13	33 33	67 70			4,520 16
September				18 05		18 05	39 14	4 50			61 6
October		111 82	3,667 90	693 70	3 75	4,477 17	8 05	2 40		22 36	4,509 98
November			9,458 23	583 95	195 60	10,237 78	9 60	5 70			10,253 08
December				488 26	1,063 37	1,551 63	61 45	2 40			1,615 48
1916.											
January	2,983 05	1,221 64	14,878 00	1,660 15	506 92	21,249 76	40 00	1 30	472 08		21,763 14
February				269 42		269 42	41 50	50			311 42
March		2 84	17 65	491 71	15 40	527 60	55 42		50 09		633 11
Totals	2,983 05	5,274 66	37,970 63	7,667 88	12,489 92	66,386 14	421 63	608 35	1,052 55	22 36	68,491 03
Collected at Head Office.											
1915.											
April		62 32				62 32					62 32
May		2,496 00				2,496 00	1 60				2,497 60
June		68 65				68 65					68 65
July		68 65				68 65	5 55				74 20
August											
September							9 68				9 68
October											
November							1 16				1 16
December							3 20				3 20
1916.											
January							91 20				91 20
February							58 32				58 32
March				17 75		17 75	16 40				34 15
Totals		2,695 62		17 75		2,713 37	187 11				2,900 48
Grand Totals	2,983 05	7,970 28	37,970 63	7,685 63	12,489 92	69,099 51	608 74	608 35	1,052 55	22 36	71,391 51

SCHEDULE B.—Showing the Saw-Mills operating within the Prince Albert Agency under Government License for the Fiscal Year ending March 31, 1916.

No.	Mill-Owner.	Location of Mill.	Berth No.	Kind of Power	Horse-power.	Capacity per ten hours.	Species of Timber cut.	LUMBER.			LOG COUNT.		
								Manufactured Ft. B. M.	Sold. Ft. B. M.	On hand Ft. B. M.	Logs Cut.	Logs Manufactured.	Logs on hand.
1	Geo. Burn	Prince Albert.	66a	Steam	1200	160,000	Spruce	16,470,861	16,821,994	5,302,608	70,820	278,214	76,704
2	Geo. Burn	Prince Albert.	474	"	1200	160,000	"	6,658,498	9,643,326		241,444	115,975	287,181
3	Prince Albert Lbr. Co., Ltd	Prince Albert.	633	"	1200	160,000	"	4,684,007	11,217,810		78,423	74,826	3,597
4	Prince Albert Lbr. Co., Ltd	Prince Albert.	801	"	1200	160,000	"		3,811,899				
5	Prince Albert Lbr. Co., Ltd	Prince Albert.	765	"	1200	160,000	"	153,852	153,852			2,704	
6	Saskatchewan Lbr. Co., Ltd	Crooked river	961	"	250	35,000	"		269,623	453,323	29,894		29,894
7	Saskatchewan Lbr. Co., Ltd	Crooked river	1785	"	250	35,000	"		108,178				
8	Finger Lumber Co., Ltd	The Pas	1274	"	700	100,000	"	3,107,840	8,541,658	8,840,237	233,591	59,669	305,953
9	Finger Lumber Co., Ltd	The Pas	920	"	700	100,000	"	8,096,151	10,306,262	711,591	138,490	137,780	134,800
10	National Trust Co., Ltd	Big River	1048	"	1600	200,000	"	17,139,227	5,299,215	9,794,162		308,140	507,320
11	National Trust Co., Ltd	Big River	1049	"	1600	200,000	"	15,512,470	20,816,460		135,421	319,130	135,421
12	A. Hitchcock	Dahlton	1158	"	1600	200,000	"	162,222	110,596	139,626		3,823	6,012
13	Pearse & Edworthy Bros	Pecsane	2036	"	1600	200,000	"	572,200	760,305	66,010	23,789	11,829	21,485
14	Geo. Burn	Prince Albert.	698	"	1200	160,000	"				39,600		39,600
15	Big River Lumber Co., Ltd	Big River	1049	"	1600	200,000	"						
16	Prince Albert Lbr. Co., Ltd	Prince Albert.	868	"	1200	160,000	"				243,954		243,954
17	Prince Albert Lbr. Co., Ltd	Prince Albert.	708 &802	"	1200	160,000	"				57,995		57,995
18	Prince Albert Lbr. Co., Ltd	Prince Albert.	691	"	1200	160,000	"				111,887		111,887
							Totals	72,557,328	87,861,178	25,307,857	1,405,308	1,312,090	1,961,803

SCHEDULE B.—Showing the Saw-Mills operating within the Prince Albert Agency under Government License for the Fiscal Year ending March 31, 1916—*Concluded.*

No.	Mill-Owner.	Average per log Ft. B. M.	Laths.			No. of Returns made.	Date of Last Return	Remarks.
			Manufactured.	Sold.	On hand.			
1	Geo. Burn		4,964,800	2,870,300	11,770,100	4	March 31, 1916	1,500 lin.ft. piling sold, nil on hand.
2	Geo. Burn		2,069,950	2,088,500		4	March 31, 1916	
3	Prince Albert Lbr. Co., Ltd		1,314,450	1,314,450		4	March 31, 1916	
4	Prince Albert Lbr. Co., Ltd					4	Feb 6, 1916	Berth cancelled.
5	Prince Albert Lbr. Co., Ltd		48,750	48,750		1	June 30, 1915	
6	Saskatchewan Lbr. Co., Ltd		26,950	16,950	10,000	4	March 31, 1916	
7	Saskatchewan Lbr. Co., Ltd		8,600	10,000		4	March 31, 1916	40 F. Posts cut 1,780 sold nil on hand.
8	Finger Lumber Co., Ltd		1,210,000	1,368,200	39,500	4	March 31, 1916	
9	Finger Lumber Co., Ltd		2,846,000	2,547,900	1,012,950	4	March 31, 1916	
10	National Trust Co., Ltd		5,245,600	2,824,600	4,466,850	4	March 31, 1916	
11	National Trust Co., Ltd		7,556,200	7,558,050		4	March 31, 1916	489¼ cords wood sold nil on hand. 478 F. Posts cut 1,260 sold nil on hand.
12	A. Hitchcock							
13	Pearse & Edworthy Bros					4	March 31, 1916	
						4	March 31, 1916	4,730 ft. piling cut and on hand.
14	Geo. Burn					4	March 31, 1916	
15	Big River Lumber Co., Ltd	2,853				2	Sept. 30, 1915	
16	Prince Albert Lbr. Co., Ltd					4	March 31, 1916	
17	Prince Albert Lbr. Co., Ltd					4	March 31, 1916	
18	Prince Albert Lbr. Co., Ltd					4	March 31, 1916	
	Totals	2,853	25,291,300	20,587,700	17,299,400	67		

SCHEDULE "C."—Showing the Mills (including the Portable Mills) operating within the Prince Albert, Sask., Agency, under Government Permits, for the fiscal Year ending March 31, 1916.

No.	Mill-Owner.	Location of Mill.	Berth No.	Species of Timber cut.	LUMBER.			LOG COUNT.		
					Manufactured Ft. B. M.	Sold Ft. B. M.	On hand Ft. B. M.	Logs cut.	Logs Manufactured.	Logs on hand.
1	Hornseth & Jacklin	7–52–13–2	2075	Spruce		85,772				
2	H. R. Kundson	30–40–14–2	1630	"		5,544	32,401			
3	R. E. Smyth	4–48– 7–3	1627	"		4,405				
4	Prince Albert Lumber Co	29–51– 1–3	65 S.L.	"						
5	Prince Albert Lumber Co	29–51– 1–3	832	"						
6	Prince Albert Lumber Co	29–51– 1–3	1840	"	526,090	975,480			16,302	
7	Warren Shaw	5–43–11–2	1905	"	171,256	40,000	131,356			125
8	Andrew Nugent	29–49–22–2	1903a	"	8,000	10,731	2,552		150	847
9	J. B. Albert	18–50–27–2	2059	"	183,329	183,329			2,374	300
10	Chas. Shaw	5–43–11–2	2049	"	52,120	Nil	79,720	620	1,000	490
11	Finger Lumber Co., Ltd		174 S.L.	"						
12	F. L. Smyth	19–48– 7–3	2028	"	16,750	22,240	16,005		520	950
13	Robf. J. Schwartz	15–50– 8–3	2089	"		4,000	35,410			618
14	Saskatchewan Lbr. Co	29–44– 8–2	170S.L.	"						
15	J. H. Barnum	25–45–12–2	2095	"			39,300			
16	H. N. Egeland	28–51– 5–3	2130	"	180,000	213,257	86,644		3,600	1,000
17	J. Otte		2157	Spruce pine					10	20
18	Finger Lumber Co		729S.L.	Spruce						
19	Leonard Hodgson	22–40–14–2	2199	"	13,395	44,286		283	283	
20	A. H. Cunningham	Ravine Band	2201	"		46,000				
21	A. L. Brown	6–56–21–3	2202	"	230,833	248,354	10,594	5,597	6,123	
22	J. S. Spitza	13–55–25–3	2198	"	145,141	180,770	39,061	2,830	2,977	1,855
23	W. A. Asselshire	12–49–11–2	2174	"		82,031	7,096			
24	A. Jacobsen	8–53–16–3	2213	"	197,167	157,695	39,472	3,188	5,624	2,005
25	I. Nadon	10–56–21–3	2206	"	209,962	209,962		6,454	6,454	
26	Saskatchewan Lbr. Co	Crooked river	138S.L.	"						
27	Saskatchewan Lbr .Co	Crooked river	139S.L.	"						
				Totals	1,934,043	2,513,856	399,611	18,972	45,417	8,210

SCHEDULE "C."—Showing the Mills (including the Portable Mills) operating within the Prince Albert, Sask., Agency, under Government Permits, for the fiscal year ending March 31, 1916—*Continued.*

No.	Mill-Owner.	Average per log Ft. B. M.	Lath.			No. of Returns made.	Date of Last Return.	Remarks.
			Manufactured.	Sold.	On hand.			
1	Hornseth & Jacklin					4	March 31, 1916	
2	H. R. Kundson					4	March 31, 1916	
3	R. E. Smyth					2	Sept. 30, 1915	Operations complete Berth cancelled.
4	Prince Albert Lumber Co					4	March 31, 1916	
5	Prince Albert Lumber Co					4	March 31, 1916	
6	Prince Albert Lumber Co		147,600	290,050	Nil	2	Sept. 30, 1915	Operations complete.
7	Warren Shaw					3	Dec. 31, 1915	
8	Andrew Nugent					4	March 31, 1916	
9	J. B. Albert					4	March 31, 1916	
10	Chas. Shaw					3	Dec. 31, 1915	
11	Finger Lumber Co., Ltd					4	March 31, 1916	
12	F. L. Smyth					4	March 31, 1916	
13	Robt. J. Schwartz					4	March 31, 1916	
14	Saskatchewan Lbr. Co					3	Dec. 31, 1915	
15	J. H. Barnum					1	June 30, 1915	Cannot obtain Returns. No notice taken of our letters.
16	H. N. Egeland					4	March 31, 1916	
17	J. Otte					2	Sept. 30, 1915	32 cord wood on hand. Shingles: manufactured, 39,000; sold, 36,000; on hand, 37,000; All material under seizure.
18	Finger Lumber Co					4	March 31, 1916	
19	Leonard Hodgson					3	Dec. 31, 1915	
20	A. H. Cunningham					4	March 31, 1916	
21	A. L. Brown					4	March 31, 1916	
22	J. S. Spitza					4	March 31, 1916	
23	W. A. Asselshire					3	Dec. 31, 1915	
24	A. Jacobsen					4	March 31, 1916	
25	I. Nadon					2	Sept. 30, 1915	Operations complete.
26	Saskatchewan Lbr. Co					4	March 31, 1916	
27	Saskatchewan Lbr. Co					4	March 31, 1916	
	Totals		147,600	290,050		92		

SCHEDULE "C."—Showing the Mills (including the Portable Mills) operating within the Prince Albert, Sask., Agency, under Government permits, for the fiscal year ending March 31, 1916—*Continued.*

No.	Mill Owner.	Location of Mill.	Berth No.	Species of Timber Cut.	LUMBER.			LOG COUNT.		
					Manufactured Ft. B. M.	Sold Ft. B. M.	On Hand Ft. B. M.	Logs Cut.	Logs Manufactured.	Logs on Hand.
	Forward				1,934,043	2,513,856	399,611	18,972	45,417	8,210
28	Wm. Nichol	3-41-11-2	2217	Spruce	185,689	9,1119	94,570	6,473	2,923	3,550
29	A. G. Cook	2-50-11-3	2242	"				310		310
30	P. Eidsvig	20-56-27-3	2259	"	74,700	23,500	51,200	830	830	Nil
31	T. Nadon	5-56-21-3	2260	"						
32	McKenzie Ellis Wood Co	F..W.	859	Pine and Spruce	Cordwood	Berth				
33	"	"	875	"		"				
34	"	"	877	"		"				
35	"	"	941	"		"				
36	Chas. Shaw	5-43-11-2	2251	Spruce						
37	Leonard Hodgson	20-40-14-2	2268	"	127,127	98,569	28,558	2,205	2,205	
38	H. N. Egeland	29-51- 4-3	233 S L	"				2,000		2,000
39	Hornseth & Jacklin	7-52-13-2	2257	"	176,993	19,891	157,102	3,146	3,146	
40	D. McRae	24-50-13-3	2226	"	22,000	2,596	19,404	1,337	305	1,032
41	J. B. Albert	34-51- 1-3	2271	"				1,191		1,191
					2,520,552	2,749,531	750,445	36,464	54,826	16,293

SCHEDULE "C."—Showing the Mills (including the Portable Mills) operating within the Prince Albert, Sask., Agency, under Government Permits, for the fiscal year ending March 31, 1916—*Concluded.*

No.	Mill Owner.	Average per log Ft. B. M.	Railway Ties.			No. of Returns made.	Date of Last Return.	Remarks.
			Manufactured.	Sold.	On hand.			
	Forward		147,600	290,050			92	
28	Wm. Nichol					4	March 31, 1916	
29	A. G. Cook					2	March 31, 1916	
31	P. Eidwig					1	March 31, 1916	
31	T. Nadon							Operations not commenced.
32	McKenzie Ellis Wood Co.					2	March 31, 1916	3,201 cords wood cut, 73 cords sold and on hand, 3,128 cords.
33	"					2	March 31, 1916	511 cords cut and sold, nil on hand.
34	"					2	March 31, 1916	78 cords manufactured, 5,366 ties sold. 2,272½ cords sold, 3,337 ties on hand.
35	"					2	March 31, 1916	2,991 fence posts manfd, 6,500 sold, 700 on hand. No operations.
36	Chas. Shaw							Operations not commenced.
37	Leonard Hodgson					1	March 31, 1916	
38	H. N. Egeland					1	March 31, 1916	
39	Hornseth & Jacklin					1	March 31, 1916	
40	D. McRae					1	Dec. 31, 1916	
41	J. B. Albert					1	March 31, 1916	
			147,600	290,050		112		

SCHEDULE "D."—General Office Return of the Crown Timber Agency, Prince Albert, for Fiscal Year ending March 31, 1916.

Particulars.	Number, etc.	As compared with previous year. — Increase.	As compared with previous year. — Decrease.	Remarks.
Letters received	34,051	6,104		
Letters written	35,889		5,077	
Permits subject to dues issued	122		342	
Free permits issued	509		1,024	
Seizures made	28		27	
Mill returns received and verified	179	26		
Mills operating under Government license	6			
Mills operating under government permits	34	6		
	Ft. B.M.	Ft. B.M.	Ft. B.M.	
Quantity of lumber manufactured, under license	72,557,328	23,750,072		
Quantity of lumber sold, under license	87,861,178	41,050,794		
Quantity of lumber on hand, under license	25,307,857		28,887,468	
Hay permits issued	258		124	

No. 31d.

Notwithstanding the severity of the winter during the logging season, a slightly larger cut was taken out than during the past two or three winters; this is particularly gratifying as the stocks of lumber on hand have been considerably depleted and there has been a steady increase in demand. The prices also have risen appreciably, and altogether the outlook at the present time for increased activity generally is very hopeful.

The imposition of the 7½ per cent war-tax duty on all lumber imported is being commented upon generally by the trade in a very favourable manner and expressions are given freely, that this should be retained indefinitely.

Attached hereto are the following:—

Schedule "A," showing receipts from timber, grazing and hay on Dominion Lands.

Schedule "B," showing saw-mills operating under license and the extent of such operations.

Schedule "C," showing the mills, including portable mills operating under permits, and the extent of such operations.

Schedule "D," general office return.

In addition to the figures and information furnished in the above, the following statement shows the quantity of timber authorized under permits issued to settlers and others on Dominion Lands:—

Settlers' Permits.

Number of free permits issued to settlers and others	733
Quantity authorized—	
Lumber (feet b.m.)	1,322,227
Building logs (lineal feet)	434,273
Roof poles	41,215
Fence rails	116,700
" posts	164,845
Cords of wood	12,209
Railway ties. (Hudson's Bay Construction Co.)	10,000
Lineal feet of piling (Hudson's Bay Construction Co.)	10,000
Settlers' permits and others on which dues were paid	352
Quantity authorized—	
Lumber (feet b.m.)	592,616
Building logs (lineal feet)	4,570
Roof poles	175
Fence rails	300
" posts	29,255
Railway ties	98,000
Cords of wood	8,351
Lineal feet of piling	20,000
Telegraph and telephone poles	25

Cordwood Berths.

Number of permits issued on cordwood berths	33
Authorizing the cutting of the following quantity of timber, viz.—	
Cords of wood	2,550
Fence posts	95,500
Telegraph and telephone poles	5,000
Railway ties	1,000

Permit Berths.

Number of permits issued on permit berths	75
Authorizing the holders thereof to cut—	
Cords of wood	44,945
Fence posts	2,000
Lumber (feet b.m.)	1,050,000

License Berths.

Number of permits issued on license berths	1
Authorizing the cutting of—	
Cords of wood	100
Total number of permits issued during the year	1,194

Seizures.—During the year sixty-four seizures were made, covering timber cut on Dominion Lands, as follows:—

Number of feet b.m. of lumber covered thereby		16,686,273
Included in the above the the following—		
	Feet B.M.	
Red Deer Lumber Co., Ltd., No. 5 boards	1,508,926	
Saskatoon Lumber Company trans. from T.B. a/c	396,190	
D. Silver, trans. from portable saw-mill a/c	103,133	
Great West Lumber Company	14,464,791	
Lineal feet of building logs		216
Railway ties		9,265
Fence posts		23,990
Telegraph and telephone poles		25
Poles for corduroy road		6,460
Cords of wood		315
Sailing masts		16
" booms		32

Hay Permits.

Number of hay permits issued on Dominion Lands during the year.	843
Number of tons of hay covered thereby	11,961

Hay Seizures.

Number of hay seizures on Dominion Lands during the year	6
Number of tons of hay covered thereby	56

J. TOD,
Acting Crown Timber Agent.

SCHEDULE "A."—Statement of Receipts from Crown Timber Agency at Winnipeg for Fiscal Year ending March 31, 1916.

Month.	Bonus under License.	Ground Rent under License.	Royalty Dues under License.	Permit Fees, Dues and Rental.	Seizures.	Total Timber.	Grazing Land Rental.	Hay Permits, Fees and Dues.	Fire-guarding Fees.	Registration Fees.	Total.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1915.											
April		2,370 59	982 87	946 03	109 50	4,408 99				4 00	4,412 99
May		2,038 85	466 07	575 00	211 31	3,291 23		411 25			3,702 48
June		748 08	659 03	1,613 09	319 00	3,339 20		494 95	100 55		3,934 70
July		2,556 45	1,550 16	1,767 55	759 44	6,633 60		518 15	13 44		7,165 19
August		328 15	2,174 43	1,074 17	8 00	3,584 75		149 85		2 00	3,736 60
September		38 80		300 92	258 88	598 60		10 50	59 76		668 86
October		157 84	1,940 11	322 87	1,330 15	3,750 97		11 90	11 20		3,774 07
November		391 90	1,588 46	1,072 87	38 34	3,091 57		0 46	2 24	2 00	3,096 21
December			4,369 88	1,776 18	34 79	6,180 85		1 02		4 00	6,185 87
1916.											
January		194 64	2,151 66	1,769 70	1,034 49	5,150 49		6 20	32 55	9 50	5,198 74
February		180 90	801 27	2,385 07	614 19	3,981 43		1 50	62 25		4,045 18
March			2,373 94	1,295 30	504 91	4,174 15			2 48	2 00	4,178 63
Totals		9,006 20	19,057 88	14,898 75	5,223 00	48,185 83		1,605 72	284 47	23 50	50,099 52
Collected at Head Office.											
1915.											
April		17 50				17 50					17 50
May											
June		25 50				25 00					25 00
July		25 00				25 50					25 50
August											
September											
October					5 00	5 00					5 00
November		153 35				1,012 79	1,166 14				1,166 14
December											

1916.													
January		25 00	40 00				65 00						65 00
February		60 67	24 35				85 02						85 02
March													
Totals		307 02	64 35	5 00	1,012 79	1,389 16							1,389 16
Grand Totals		9,313 22	19,122 23	14,903,75	6,235 79	49,574 99			1,605 72	284 47	23 50		51,488 68

SCHEDULE "B."—Showing the Saw-Mills operating within the Winnipeg Agency under Government License for the Fiscal Year ending March 31, 1916.

No.	Mill-Owner.	Location of Mill.	Berth No.	Kind of Power.	Horse Power.	Capacity per 10 hours.	Species of Timber cut.	LUMBER.			LOG COUNT.		
								Manufactured Ft. B. M.	Sold. Ft. B. M.	On hand Ft. B. M.	Logs cut.	Logs Manufactured.	Logs on hand.
1	Bjornson Halli	(No mill)	1250								780		780
2	Bank of Ottawa	Prairie river	960	Steam	200	60,000	Spruce	1,298,000	1,963,095	3,182		51,009	
3	Burrows, Theo. A	Grandview	575	"	450	100,000	"	297,588	88,909	297,588	5,600	5,600	
4	Canadian Bk. of Commerce	Mafeking	1101	(Destroyed by fire)			Spruce and poplar	321,890	1,308,859		7,809	7,809	
5	Caverley Bros	Sec. 17-38-28W	1790	Steam	5015	18000	Spruce	1,106,686	682,258	1,404,358	23,032	23,032	
6	Dutton, W.P.	Greenbush, Sask.	1713	"	250	50,000	Spruce	1,219,264	539,240 1,550,777	203,502 751,020			
7	Frank & Shannon	Clements Pt.	546	"	45	20,000	"						3,000
8	Gunn, John	Point du bois	1545	"	100	20,000	"			142,400			
9	Hallberg, Hallberg & Larson	(No mill)	1681	"			"		3,445,880				
10	Moore, E. D	(No mill)	1245				"		100,000				
11	Mutchenbacker Bros	(Mill destroyed by fire)	1089				Spruce and poplar	186,197	186,197		3,877	3,877	
12	McArthur Co., Ltd., J. D	Lac du Bonnet	702 ex Blk 4	Steam	100	50,000	Spruce and tamarack	2,894,630	1,971,929	922,701	27,002	53,476	34,293
13	McArthur Co., Ltd., J. D	Lac du Bonnet	1189	"	100	50,000	"	1,331,590	989,450	560,032		26,322	23,664
14	McArthur, Peter	Graves Point	1063	"	60	22,000	"	9,885		9,885		200	3,972
15	McArthur, Peter	Graves Point	824	"	60	22,000	"	1,904,075	1,490,228	1,620,564		40,663	2,000
16	McClure, J. H	Blamoral	924	"	80	30,000	Spruce		150,150				
17	MacKenzie, Mann Co., Ltd	Chemong, Sask.	1241	"	100	30,000	"		749,099				
							Forward	10,569,805	15,216,071	5,915,232	68,100	211,988	67,709

SCHEDULE "B."—Showing the Saw-Mills operating within the Winnipeg Agency under Government License for the Fiscal Year ending March 31, 1916—*Continued.*

No.	Mill-Owner.	Average Per log Ft. B. M.	Railway Ties.	Laths.			Number of Returns made.	Date of Last Return.	Remarks.
			On hand.	Manufactured.	Sold.	On hand.			
1	Bjornson, Halli						4	March 31, 1916	
2	Bank of Ottawa	25					2	Sept. 30, 1915	Operated by Shaw Bros., Dauphin.
3	Burrows, Theo. A	52					4	March 31, 1916	
4	Canadian Bk. of Commerce	41					4	March 31, 1916	Operated by Mutchenbacker Bros., Mafeking.
5	Caverley Bros	48		87,700	87,700		4	March 31, 1916	
6	Dutton, W. P						4	March 31, 1916	Operated by MacKenzie, Mann & Co.
				122,750	102,000	20,750	4	March 31, 1916	Operated by W. P. Dutton.
7	Frank & Shannon								
8	Gunn, John		9,281				4	March 31, 1916	
9	Hallberg, Hallberg & Larson			152,150	619,000		4	March 31, 1916	Operated by W. P. Dutton.
10	Moore, E. D						4	March 31, 1916	
11	Mutchenbacker Bros	48					4	March 31, 1916	
				223,000	85,450	137,550	4	March 31, 1916	
12	McArthur Co., Ltd., J. D	54					4	March 31, 1916	
13	McArthur Co., Ltd., J. D	50		156,500	133,110	23,390	4	March 32, 1916	
14	McArthur, Peter	49		9,885		9,885	4	March 31, 1916	
15	McArthur, Peter	46					4	March 31, 1916	
16	McClure, J. H						3	Dec. 31, 1915	Now cancelled.
17	MacKenzie, Mann Co., Ltd						3	Dec. 31, 1915	Now cancelled.
	Forward		9,281	751,985	1,027,260	191,575			

SCHEDULE "B."—Showing the Saw-Mills operating within the Winnipeg Agency under Government License for the Fiscal Year ending March 31, 1916—*Continued.*

No.	Mill-Owner.	Location of Mill.	Berth No.	Kind of Power.	Horse Power.	Capacity per 10 hours.	Species of Timber cut.	Lumber.			Log Count.		
								Manufactured. Ft. B. M.	Sold Ft. B. M.	On hand. Ft. B. M.	Logs Cut.	Logs Manufactured.	Logs on hand.
								10,569,805	15,216,071	5,915,232	68,100	211,988	67,709
18	McLellan, Hillson & Rogers	Ruby lake	964	Steam.	200	25,000	Spruce and tamarack	153,507	268,453				1,164
19	National Trust Co., Ltd.	Birch river	986	"	150	45,000	Spruce, tamarack and poplar	2,928,262	2,355,803	572,459	146,780	72,261	175,964
20	National Trust Co., Ltd.	Fishtown spur	992	"	60	25,000	"		1,243,638	30,980			
21	National Trust Co., Ltd.	Gradview	571a	"	450	125,000	"		3,040,344				
22	National Trust Co., Ltd.		1120						1,087,516	236,950	57,050		81,212
23	Robinson, Wm.	Black river Humbug bay	869	Steam.	100	35,000	Spruce and tamarack		145,910			7,129	
24	Red Deer Lumber Co.	Barrows	1282	"	650	130,000	Spruce	382,214	382,214			68,077	
25	Red Deer Lumber Co.	Barrows	92	"	650	150,000	"	3,648,927	5,316,369	2,632,371	238,405	98,065	238,405
26	Red Deer Lumber Co.	Barrows	823	"	650	130,000	"	4,576,774	4,675,406	2,453,211		56,528	56,528
27	Red Deer Lumber Co.	Barrows	1239	"	650	130,000	"						
28	Shaw, James & Thomas	Prairie river	974	"	350	100,000	Spruce, tamarack and poplar		489,473		15,496		15,496
29	Thorvaldson & Simpson	Sec. 20–23–4 E	1887	"	45	15,000	Spruce and tamarack		102,970				1,000
30	Union Bank of Canada	Sec. 15–25–4 E	1685	"	60	15,000	"						
31	Williams, W. J. F.	N.E. 31–28–17	944	"	25	4,000	Spruce	45,498	77,142	163,715	1,037	1,537	
							Totals	22,304,987	34,401,309	12,004,918	583,396	459,057	637,478

SCHEDULE "B."—Showing the Saw-Mills operating within the Winnipeg Agency under Government License for the Fiscal Year ending March 31, 1916—*Concluded.*

No.	Mill-Owner.	Average per log. Ft. B. M.	Railway Ties.	Laths.			Shingles.	Number of Returns made	Date of Last Return.	Remarks.
			On hand.	Manufactured.	Sold.	On hand.	Sold.			
	Forward		9,281	751,985	1,027,260	191,575				
18	McLellan, Hillson & Rogers				10,000	55,000		4	March 31, 1916	
19	National Trust Co., Ltd	40		765,567	828,600	70,342		4	March 31, 1916	
20	National Trust Co., Ltd							4	March 31, 1916	Operated by T. A. Burrows, Grandview.
21	National Trust Co., Ltd							4	March 31, 1916	
22	National Trust Co., Ltd							4	March 31, 1916	
23	Robinson, Wm							4	March 31, 1916	
24	Red Deer Lumber Co	53		221,500	221,500			4	March 31, 1916	
25	Red Deer Lumber Co	53		1,475,200	1,648,750			4	March 31, 1916	
26	Red Deer Lumber Co	46		2,289,900	1,556,150	830,000		4	March 31, 1916	
27	Red Deer Lumber Co							4	March 31, 1916	
28	Shaw, James & Thomas							4	March 31, 1916	Operated by W. P. Dutston.
29	Thorvaldson & Simpson							4	March 31, 1916	
30	Union Bank of Canada							4	March 31, 1916	Operated by W. H. Sparrow.
31	Williams, W. J. F	30					61,000	4	March 31, 1916	
	Totals		9,281	5,504,152	5,292,260	1,147,217	61,000			

SCHEDULE "C."—Showing the Mills (including the Portable Mills) operating within March

No.	Mill Owner.	Location of Mill.	Berth No.	Species of Timber cut.	LUMBER. Manufactured. Ft. B. M.	LUMBER. Sold Ft. B. M.
	Portable Sawmill Berths.					
1	Anderson, Oscar	W½ 25–36–32 W.	2254	Spruce	288,123	288,123
2	Attwood, Emerson E	N E 3–37–24 W.	2022	Spruce	10,460	23,182
3	Boily, P. E	N W 31–6–11 E.	2181	Spruce, tamarack and jack pine.	79,711	71,286
4	Bouvier, Eusebe	S E 6–24–1– W.	2019	Spruce		96,150
5	Butson, Wm. F	S E 28–39–25 W.	2119	Spruce		44,745
6	Butson, Wm. F	N E 34–30–25 W.	2245	"		
7	Coté, David	S W 3–6–10 E.	2135	Spruce and tamarack	119,471	119,471
8	Coté, David J. E	S W 3–6–10 E.	2298	" "	12,930	12,930
9	Danard, R. R	S E 36–36–26 W.	2185	" "	115,183	53,457
10	Dixon, Robert	S W 29–27–4 W.	2050	Poplar		18,900
11	Finnson, Sigurdur	S W 33–24–3 E.	2162	Spruce, tamarack and poplar.	150	20,150
12	Hawkins, J. A	9–35–27 W.	2002	Spruce		21,193
13	Heale, Walter G	Teulon	2096	"	60,000	95,000
14	Herron, Henry	N W 3–41–25 W.	2133	Spruce and tamarack	137,000	133,870
15	Hunter, James D	Fishers	2131	"	28,099	33,172
16	Hunter, James D	Fishers	2253	"		
17	Jefferson, Francis J	N E 9–22–1 E.	2103	Spruce, tamarack and poplar.		25,080
18	Jefferson, W. D	N W 16–23–1 E.	2234	Spruce	9,500	9,500
19	Johnston, Geo. C	25–20–1 W.	2197	Spruce and tamarack	3,200	29,300
20	Marshall, John	17–23–11 W.	2007	Spruce and poplar		66,227
21	Matheson, H. W	31–26–5 W.	2200	Spruce and tamarack		35,918
22	McClure, Albert E	N E 11–25–3 W.	2171	Spruce, tamarack and jack pine.	104,710	59,539
23	McKay, Colin	S W 15–38–25 W.	2203	Spruce and tamarack		29,643
24	McNabb, W. G	16–38–27 W.	1131	Spruce	70,400	100,000
25	Neault, Albert	N E 6–29–12 W.	2189	"	48,872	45,723
26	Parkinson, J. S	S E 30–35–39 W.	2100	Black poplar and spruce.		5,151
27	Parkinson, Wm	S E 30–35–39 W.	2011	Black poplar and spruce.		53,498
28	Poncelet, Jos	N E 17–23–2 W.	2297	Spruce	25,000	1,800
29	Rushoy and Anderson	Kilkenny	2193	Spruce	70,635	49,572
30	Sigurdson, Sigurdur	S E 28–22–1 E.	2240	"	83,400	
31	Sigurgeirson, W	28–22–1 E.	2215	"		
32	Silver, Dan	Marble Ridge	2012	Spruce and tamarack		30,467 103,133
33	Steenerson, Ingwald	N E 34–35–7 W.	1934	Poplar		14,653
34	Sigurdson, Sigurdur	S E 28–22–1 E.	2177	Spruce	523	60,523
					1,267,367	1,801,356
	Permit Berths.					
1	Caverley, Jefferson	Porcupine Mtn.	966	Spruce and tamarack	1,097,207	1,011,519
2	Fuikelstein and Haglund	25–26–3 W.	2230	"		
3	Jefferson, W. D	N W 16–23–1 E.	899c	"	97,384 150,250	69,000
4	Laurie, J. E	35–10–10 E.	1975	Spruce		10,200
5	Serkan & Smith	(No mill)	1090	"		
6	McArthur Co. Ltd., J. D	Lac du Bonnet	1944	Spruce and tamarack		
					1,344,841	1,090,719

SESSIONAL PAPER No. 25

the Winnipeg Agency, under Government Permits, for the Fiscal Year ending 31, 1916.

Log Count.				Average per log Ft. B. M.	No. of Returns made.	Date of Last Return.	Remarks.
On Hand Ft. B. M.	Logs Cut.	Logs Manufactured.	Logs on Hand.				
	7,753	7,753		37	2	31 March, 1916	
		270		38	2	31 Dec. 1915	Cancelled.
61,113	2,596	2,596		30	4	31 March, 1916	
					4	31 March, 1916	Cancelled.
					4	31 March. 1916	Cancelled.
					4	31 Dec., 1915	Cancelled.
	3,880	3,880		30	1	31 Dec., 1915	
	420	420		30	4	31 Dec., 1915	Cancelled.
61,726	1,741	1,937	1,741	59	4	31 Dec., 1915	Cancelled.
					2	30 Sept., 1915	Cancelled.
					4	31 March, 1916	Cancelled.
139,540					4	31 March, 1916	Cancelled.
		1,900		31	3	31 Dec., 1915	Cancelled.
168,671	1,965	3,165		43	4	31 March, 1916	Cancelled.
		545		51	3	31 Dec., 1915	Cancelled.
	481		481		2	31 March, 1916	
					2	30 Sept., 1915	Cancelled.
	234	234		40	2	31 March, 1916	
		61		52	4	31 March, 1916	Cancelled.
					4	31 March, 1916	Cancelled.
19,000					4	31 March, 1916	Cancelled.
57,171		2,460		42	4	31 March, 1916	Cancelled.
					4	31 March, 1916	Cancelled.
96,400		1,424		49	4	31 March, 1916	Cancelled.
23,646		1,038		47	4	31 March, 1916	
					1	30 June, 1915	Cancelled.
					3	31 Dec., 1915	Cancelled.
23,200	850	430	420	58	1	31 March, 1916	
40,113	2,000	2,371		30	4	31 March, 1916	Cancelled.
83,400	2,280	2,280		36	2	31 March, 1916	
					2	31 Dec., 1915	
		2,548			1	30 June, 1915	Cancelled.
Transferred to seizure acc							
					2	30 Sept., 1916	Cancelled.
					3	31 Dec., 1915	Cancelled.
773,980	24,200	35,312	2,642				
1,809,052	16,832	16,832		65	4	31 March, 1916	
	15,582		15,582		1	31 March, 1916	
178,634	6,321	6,321		39	4	31 March, 1916	
					4	31 March, 1916	
	886		886		4	31 March, 1916	
	5,213		5,213		1	31 March, 1916	
1,987,686	44,834	23,153	21,681				

SCHEDULE "D."—General Office Return of the Crown Timber Agency, Winnipeg, for Fiscal Year ending March 31, 1916.

Particulars.	Number, etc.	As compared with previous year. — Increase.	As compared with previous year. — Decrease.	Remarks.
Letters received	6,876	–		Were previously included with Dominion Lands Branch.
Letters written	8,460	–		
Permits subject to dues issued	461		159	
Free permits issued	733		406	
Seizures made	64	13		
Mill returns received and verified	241		21	
Mills operating under government license	19		1	
Mills operating under government permits	33		10	
Quantity of lumber manufactured, under license	22,304,987		10,524,299	
Quantity of lumber sold, under license	34,401,309	2,146,743		
Quantity of lumber on hand, under license	12,004,918		12,061,180	
Hay permits issued	843	201		

No. 31e.

KAMLOOPS, B.C.

The timber and grazing receipts for the year ending the 31st of March, 1916, amount to $18,027.21, inclusive of head office collections.

Timber cut on Dominion lands under license within this agency, during the past year, was 10,420,522 feet b.m. of sawlogs, constituting an increase of 5,083,867 feet b.m. as compared with the preceding year.

A total of 373 timber permits were issued during the above period on vacant Dominion land and unpatented homesteads covering timber as under: 9,119,712 feet b.m. of sawlogs, 58,470 lineal feet of logs, 33,059 fence rails, 7,798 roof poles, 161,505 fence posts, 5,032 cords of cordwood, 16,752 railway ties, 3,423 telephone poles, 5,975 lineal feet of mining timber, and 966 shingle bolts. There is an increase here of 4,915,473 feet b.m. of logs and a decrease in certain other productions such as telephone poles and railway ties, due to the general stagnation and also to the cessation in railway construction. The great majority of the latter logs were cut in actual clearing of land for cultivation purposes, and, as usual, dues were not charged thereon.

I am glad to say that indications point for a good demand for lumber in the near future, there being already much better prospects for a quick sale than has been known for years. Stocks have been considerably reduced and the lumber companies anticipate that they will have no difficulty in disposing of everything that can be manufactured for some time to come. This has caused regret, in some cases, that the berths were not logged more extensively during the winter months when, of course, conditions are more favourable for logging cheaply. Some mills are running night and day, the general view of the lumber situation being, in fact, much more optimistic than it has been for some time past. Of course, a large proportion of the logs cut in British Columbia are taken from off provincial holdings.

W. C. COWELL,
Agent.

SCHEDULE "A."—Statement of Receipts from Crown Timber Agency at Kamloops, for Fiscal Year ending March 31, 1916.

Month.	Bonus under License.	Ground Rent under License.	Royalty Dues under License.	Permit Fees, Dues and Rental	Seizures	Total Timber	Grazing Land Rental.	Hay Permits, Fees and Dues.	Fire-guarding Fees.	Registration Fees.	Total.
1915	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
April		1,443 51	2 25	13 75	27 92	1,487 43	416 87				1,904 30
May		920 92	178 89	44 15		1,143 96	590 88	7 60		4 00	1,746 44
June		66 35	138 00	43 00	22 58	269 93	361 64	3 00			634 57
July			480 67	9 25	23 94	513 86	436 07	2 80		2 00	954 73
August			40 28	41 00	22 81	104 09	457 29				561 38
September		15 80	203 53	4 25	36 26	259 84	558 71	9 00	120 46	2 00	950 01
October			861 42	55 00	20 00	936 42	534 88				1,471 30
November				48 50	6 10	54 60	573 62				628 22
December		1,037 93	24 25	268 85	39 60	1,370 63	1,124 97		1,839 50	2 00	4,337 10
1916.											
January			1,304 05	211 85	24 20	1,540 10	394 39				1,934 49
February		8 75	110 24	73 00	4 00	195 99	531 68				727 67
March				493 40	9 86	503 26	859 92			4 00	1,367 18
Totals		3,493 26	3,343 58	1,306 00	237 27	8,380 11	6,840 92	22 40	1,959 96	14 00	17,217 39
Collected at Head Office.											
1915.											
April							2 53				2 53
May							28 40				28 40
June											
July							80				80
August							320 24				320 24
September											
October		25 00				25 00	1 65				26 65
November		97				97	69 75				70 72
December							117 33				117 33
1916.											
January							20 35				20 35
February							220 12				220 12
March							2 68				2 68
Totals		25 97				25 97	783 85				809 82
Grand totals		3,519 23	3,343 58	1,306 00	237 27	8,406 08	7,624 77	22 40	1,959 96	14 00	18,027 22

SCHEDULE "B."—Showing the Saw-mills operating within the Kamloops Agency under Government License for the Fiscal Year ending March 31, 1916.

No.	Mill-Owner.	Location of Mill.	Berth No.	Kind of Power.	Horse Power.	Capacity per 10 hours.	Species of Timber cut.	LUMBER.	LOGS CUT.	SHINGLES.		
								Manufactured. Ft. B. M.	Logs Cut.	Manufactured.	Sold.	On hand.
1	The Okanagan Sawmills Ltd.....	Enderby....	238	Steam..	500	80m	Fir, cedar, white pine, bull pine....	1,000,184	5,995	.....	.....	
2	E. G. Wallinder.....	Kamloops..	330	Portable Saw mill only.			Fir and yellow pine..	165,622	539	.....	.....	
3	Adams River Lumber Co.....	Chase.....	482	Steam..	800	175m	Yellow and white pine, bull pine, fir, cedar, spruce, poplar.....	9,254,716	98,545	.....	.....	
4	The Columbia River Lumber Co., Ltd.....	Malakwa...	45	Small Shingle Mill.			.....	.....	.....	43 cords.		
							Totals.....	10,420,522	105,079	43		

SCHEDULE "D."— General Office Return of the Crown Timber Agency, Kamloops, for Fiscal Year ending March 31, 1916.

Particulars.	Number, etc.	As compared with previous year. — Increase.	As compared with previous year. — Decrease.	Remarks.
Letters received	Included in	Land Office	return.	
Letters written	"	"	"	
Permits subject to dues issued	46	9		
Free permits issued	326	55		
Seizures made	18		30	
Mill returns received and verified	329	49		
Mills operating under government license	3	No change.		
Mills operating under government permits				
Quantity of lumber manufactured, under license	10,420,522	5,083,867		
Quantity of lumber sold, under license				
Quantity of lumber on hand, under license				
Hay permits issued	13	7		

No. 31f.

NEW WESTMINSTER, B.C.

This is the annual report of this agency for the fiscal year ended the 31st of March last, consisting of schedule "A," statement of receipts, which shows the collections in this office as being $77,109.69, or an increase of $5,077.55 over the preceding year, to which please add the amount collected at head office; schedule "B," lands operated under government license, and the quantity of timber thus cut, given as:—

Saw logs.. .. ..feet b.m.	70,672,492
Railway ties.. .. ..pieces.	11,700
Piling and poles.. .. ..lineal feet.	43,317
Shingle bolts.. .. ..cords.	36,143 2/15.
Cordwood.. .. .. "	896
Fence posts.. .. ..pieces.	695

which is a large increase over the preceding year and indicates the revival of the chief industry of this province. Schedule "D" points to an increase in the work of this office, which has, however, been carried on with the same degree of efficiency characteristic of this office for many years past.

The following timber was cut under the different headings enumerated hereunder:—

Homestead Entry. (Under permit)—

Saw logs..	316,258 feet b.m.
Shingle bolts..	11,112 ½ cords.
Piling..	86,774 lineal feet.
Cordwood..	190 cords.

Lands Sold. (Under permit)—

Saw logs..	2,578,102 feet b.m.
Shingle bolts..	3,593 cords.
Piling..	112,472 lineal feet.
Cordwood..	496¾ cords.

Lands Under Quarrying Lease. (Under permit)—

Cordwood..	20 cords.

Vacant Dominion Lands. (Under permit)—

Saw logs..	1,666,158 feet b.m.
Shingle bolts..	2,311 cords.
Cordwood..	4 " "

The following timber was seized as having been cut in violation of the regulations:—

Saw logs..	351,452 feet b.m.
Shingle bolts..	578·81 cords.
Piling, poles and cribbing...	91,457 lineal feet.
Cordwood..	550 cords.

Under special arrangement the Western Canada Power Company, Limited, of Vancouver, B.C., cut and removed from flooded lands at Stave lake the following timber:—

Saw logs..	2,555,771 feet b.m.
Shingle bolts..	209 cords.
Cordwood..	41 "

All of which is respectfully submitted.

E. W. BECKETT,
Crown Timber Agent.

SCHEDULE "A."—Statements of Receipts from Crown Timber Agency at New Westminster, B.C., for Fiscal Year ending March 31, 1916.

Month.	Bonus under License.	Ground Rent under License.	Royalty Dues under License.	Permit Fees, Dues and Rental.	Seizures.	Total Timber.	Grazing Land Rental.	Hay Permits, Fees and Dues.	Fire-guarding Fees.	Registration Fees.	Total.
1915.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
April		4,453 23	2,484 43	909 30	25 40	7,872 36					7,872 36
May		2,549 79	1,636 12	2,628 77	243 30	7,057 98					7,057 98
June		1,828 98	2,629 74	1,648 94	116 90	6,224 56					6,224 56
July		159 03	4,557 79	554 63	200 00	5,471 45					5,471 45
August		875 52	438 11	805 55		2,119 18	36				2,119 54
September	3,269 50	8 00	887 79	3,334 73	128 83	7,628 85					7,628 85
October		153 38	6,883 92	919 99		7,957 29					7,957 29
November	1,354 70	1,503 31	1,317 96	19,26 90	20 81	6,123 68					6,123 68
December			9,111 63	1,145 42	786 62	11,043 67	36				11,044 03
1916.											
January	41 20	53 21	3,274 78	405 20	179 89	3,954 28					3,954 28
February		451 71	780 61	45 90	209 72	1,487 94					1,487 94
March	3,391 78	612 43	5,362 00	576 52	225 00	10,167 73					10,167 73
Totals	8,057 18	12,648 59	39,364 88	14,901 85	2,136 47	77,108 97	72				77,109 69
Collected at Head Office.											
1915.											
April		103 35				103 35					103 35
May		462 05				462 05					462 05
June											
July											
August		347 45				347 45					347 45
September											
October											
November											
December											
1916.											
January											
February				21 34		21 34					21 34
March											
Totals		912 85		21 34		934 19					934 19
Grand totals	8,057 18	13,561 64	39,364 88	14,923 19	2,136 47	78,043 36	72				78,043 88

SCHEDULE "B."—Showing the Saw-mills operating within the New Westminster, B.C., Agency under Government License for the fiscal year ending March 31, 1916.

No.	Mill-Owner.	Location of Mill.	Berth No.	Kind of Power.	Horse Power.	Capacity per 10 hours.	Species of Timber cut.	Lumber.			Log Count.		
								Manufactured. Ft. B. M.	Sold. Ft. B. M.	On hand Ft. B.M	Logs Cut.	Logs Manufactured	Logs on hand.
1	Brunette Saw Mill Co., Ltd.	New Westminster	R"33(2)45	2Steam.	500	100,000	Fir, cedar and hemlock	6,218,883	6,218,883	Nil	7,796	8,014	Nil.
2	Campbell River Lbr. Co., Ltd.	White Rock, BC.	"B" 61.	Steam & Electric	700	125,000	"	235,099	235,099	Nil	319	319	Nil
3	Abbostford Tbr. & Trading Co.	Abbotsford	57, 81.	Electric	500	100,000	"	8,030,969	8,030,969	Nil	16,032	16,032	Nil
4	M. B. King Lbr. Co., Ltd.	Newton, B. C.	"H"	Steam.	225	50,000	"	9,984,526	9,984,526	Nil	17,079	16,779	600
5	Timberland Lbr. Co., Ltd.	Newton, B.C.	"R"	Steam.	175	45,000	"	6,683,950	6,683,950	Nil	13,545	12,845	700
6	Cheam Lbr. Co.	Rosedale, B.C.	"A"	"	150	35,000	"	910,692	910,692	Nil	1,772	1,682	300
7	Small & Bucklin Lbr. Co., Ltd.	New Westminster.	537	"	500	100,000	"	277,044	277,044	Nil	502	502	Nil
8	Rat Portage Lbr. Co., Ltd.	Vancouver	63	"	700	125,000	Fir	263,852	263,852	Nil	312	312	Nil
9	Pacific Shingle Co., Ltd.	Port Coquitlam	P.C. 286	"	30	90,000	Cedar						
10	Port Moody Shingle Co., Ltd.	Port Moody	485*	"	50	150,000	"						
11	British Canadian Lbr. Corp., Ltd	Vancouver	36, 94, 110	"	750	150,000	"	22,465	22,465	Nil	20	20	Nil
12	Robt. M Nair Shingle Co., Ltd	Port Moody	38 & 535*	"	120	360,000	Fir, cedar and hemlock	11,849,150	11,849,150	Nil	9,383	9,984	399
13	H. B. Sullivan	Sullivan, B.C.	470*	"	20	60,000	Cedar						
14	Stoltze Manufacturing Co., Ltd.	Ruskin, B.C.	106*	"	120	360,000	"						
15	British Empire Trust Co., Ltd.	No Mill	106				Fir, cedar and hemlock	73,291	73,291	Nil	217	217	Nil
16	U. Tamaki	"	494				Fir and cedar						
17	J. D. Kennedy	"	448				Fir, cedar and hemlock	24,066	24,066	Nil	73	73	Nil
18	C. M. Marpole	"	177				"	360,667	360,667	Nil	635	810	Nil
19	V. N. Spencer	"	336				"	19,151,668	19,151,668	Nil	29,639	29,639	Nil
20	B. Willson	"	361, 362				"	3,730,328	3,730,328	Nil	4,792	4,792	Nil
21	W. R. Spencer	"	556				Cedar						
22	E. G. English & P. McCoy	"	98, 506				Fir, cedar and hemlock						
23	R. T. Smith & C. H. Zeigler	"	400				Cedar						
24	Jenkins Estate, Ltd	"	536				"						
25	R. G. Grosvenor & H. S. Reitlinger	"	"X", 33 (1-3-4), 96, 185, 268, 309, 314	148			Fir, cedar and hemlock.	2,855,842	28,55,842	Nil	5,224	5,224	1,290
26	John Oliver	"	334				"						
27	G. C. Macgowan	"	69				"						
							Totals	70,672,492	70,672,492			107,340	107,244

Shingle Mills *

SCHEDULE "B."—Showing the Saw-mills operating within the New Westminster, B.C., Agency under Government License for the fiscal year ending March 31, 1916—*Concluded.*

No.	Mill-Owner.	Average per log Ft.B.M.	Railway Ties.			Piling and Poles Lineal Feet.			Shingles Bolts.			No. of Returns	Date of Last Return.	Cordwood.			Fence Posts.		
			Manufactured.	Sold.	On hand.	Manufactured.	Sold.	On hand.	Manufactured.	Sold.	On hand.			Cut.	Sold.	On hand.	Cut.	Sold.	On hand
1	Brunette Saw Mill Co., Ltd.	776	.....	.....	.....	3,650	3,650	Nil	2,013¼	2,013¼	Nil	12	31-3-16	8	8	Nil	.....	.....	
2	Campbell River Lbr. Co., Ltd.	737	.....	.....	.....	.....	.....	.....	3,524½	3,399¾	124¾	7	31-3-16 (2 Supp. Rets.)	8	8	Nil	.....	.....	
3	Abbotsford Tbr & Trading Co.	501	.....	.....	.....	20,063	20,063	Nil	.....	.....	.....	8	31-3-16	10	10	Nil	.....	.....	
4	M. B. King Lbr. Co., Ltd.	595	.....	.....	.....	3,398	3,398	Nil	.....	.....	.....	6	31-3-16 (2 supp.)	60½	60½	Nil	195	195	Nil
5	Timberland Lbr. Co., Ltd.	520	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	31-3-16	113	113	Nil	.....	.....	
6	Cheam Lbr. Co.	541	.....	.....	.....	.....	.....	.....	1,550¼	1,550¼	Nil	4	31-3-16	.....	.....	.....	.....	.....	
7	Small & Bucklin Lbr. Co., Ltd.	552	.....	.....	.....	.....	.....	.....	44	44	Nil	4	31-3-16	.....	.....	.....	.....	.....	
8	Rat Portage Lbr. Co., Ltd.	846	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	31-3-16	.....	.....	.....	.....	.....	
9	Paeific Shingle Co., Ltd.	.....	.....	.....	.....	.....	.....	.....	3,114	3,114	Nil	6	1-5-16	.....	.....	.....	.....	.....	
10	Port Moody Shingle Co., Ltd	.....	.....	.....	.....	.....	.....	.....	69½	94¼	Nil	4	31-3-16	.....	.....	.....	.....	.....	
11	British Canadian Lbr. Corp., Ltd.	1123	.....	.....	.....	.....	.....	.....	2,858	1,828	1,030	12	31-3-16	.....	.....	.....	.....	.....	
12	Robt. McNair Shingle Co., Ltd.	1187	.....	.....	.....	.....	.....	.....	10,105	8,442¼	5,716¾	8	31-3-16	205	205	Nil	.....	.....	
13	H. B. Sullivan	.....	.....	.....	.....	.....	.....	.....	64	64	Nil	4	31-3-16	.....	.....	.....	.....	.....	
14	Stoltze Mfg. Co., Ltd.	.....	.....	.....	.....	.....	.....	.....	5,038½	3,138½	1,900	4	31-3-16	.....	.....	.....	.....	.....	
15	Brit. Empire Trust Co., Ltd	338	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	31-3-16	.....	.....	.....	.....	.....	
16	U. Tamaki	.....	.....	.....	.....	.....	.....	.....	90	72	18	4	31-3-16	67	217	20	.....	.....	
17	J. D. Kennedy	330	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	31-3-16	.....	.....	.....	.....	.....	
18	C. M. Marpole	.....	.....	.....	.....	2,312	2,312	Nil	.....	.....	.....	4	31-3-16	.....	.....	.....	.....	.....	
19	V. N. Spencer	445	.....	.....	.....	12,269	26,854	Nil	.....	.....	.....	4	31-3-16	.....	.....	.....	.....	.....	
20	B. Willson	646	.....	.....	.....	.....	.....	.....	322½	322⅝	Nil	8	31-3-16	227½	227½	Nil	.....	.....	
21	W. R. Spencer	.....	.....	.....	.....	.....	.....	.....	4,418⅝	4,418⅝	Nil	4	31-3-16	.....	.....	.....	.....	.....	
22	E. G. English & P. McCoy	778	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	31-3-16	91	91	Nil	.....	.....	
23	R. T. Smith & C. H. Zeigler	.....	.....	.....	.....	.....	.....	.....	433 3/16	373 1/16	60	4	31-3-16	.....	.....	.....	.....	.....	
24	Jenkins Estate, Ltd	.....	.....	.....	.....	.....	.....	.....	424⅜	324⅜	100	4	31-3-16	.....	.....	.....	.....	.....	
25	R. G. Grosvenor & H. S. Reitlinger	547	6,000	6,000	Nil	.....	.....	.....	1,519½	769	750	32	31-3-16	.....	.....	.....	.....	.....	
26	John Oliver	.....	5,700	5,700	Nil	.....	.....	.....	403½	403½	Nil	4	31-3-16	106	106	Nil	500	500	Nil
27	G. C. Macgowan	.....	.....	.....	.....	1,625	Nil	1,625	151	151	Nil	4	31-3-16	.....	.....	.....	.....	.....	
	Totals	3,289	11,700	11,700	Nil	43,317	56,277	1,625	36,143 2/16	30,522 3/8	9,699½	.....	.....	896	1,046	20	695	695	Nil

SCHEDULE "D."—General Office Return of the Crown Timber Agency, New Westminster, B.C., for Fiscal Year ending March 31, 1916.

Particulars.	Number, etc.	As compared with previous year. Increase.	As compared with previous year. Decrease.	Remarks.
Letters received	2,885	Nil	349	
Letters written	5,321	431	Nil	
Permits subject to dues issued	183	41	Nil	
Free permits issued	Nil	Nil	Nil	
Seizures made	23	Nil	1	
Mill returns received and verified	820	14	Nil	
Mills operating under government license	14	4	Nil	
Mills operating under government permits				
Quantity of lumber manufactured, under license	70,672,492	22,609,037		
Quantity of lumber sold, under license				
Quantity of lumber on hamd, under license	3,289	471		
Averag price at which lu mber sold				
Hay permits issued	Nil	Nil	Nil	

No. 31g.

REVELSTOKE, B.C.

I am pleased to be able to report a very decided improvement in the lumber industry in comparison with the previous year, and I look for still greater things during the coming year as everything points to a very large demand, both at home and abroad.

Schedule "A" (attached) shows the total receipts as $20,535.63, and a very substantial increase over 1914-15.

Schedule "B" gives the quantity of timber cut under license, being as follows:—

21,076,653 ft. b.m. sawlogs.
670¼ cords of shingle bolts.
142,491 fence posts.
213½ cords of cordwood.
22 cars of waste filling.

This last-mentioned item consists of punky and waste timber, which in the ordinary course of events would be left in the woods. It is being sold to the contractors on the new tunnel through the Selkirks at Roger's Pass, and is used as a packing between the roof of the tunnel as left by blasting operations and the reinforced concrete roof in order to protect the concrete roof from damage by falling loose rock. The disposal of this refuse causes the land to be left in excellent shape and ready for settlers when made available. In addition to the above the following timber was cut on permit berths:—

49,102 feet b.m. sawlogs.
300 telephone poles.
80 cords of wood.

On lands held under homestead entry permits were issued to cut:—

215,000 feet b.m. sawlogs.
7,105 lineal feet building logs and piling.
350 fence rails.
20,200 " posts.
2,315 cords of cordwood.
1,200 railway ties.
360 telephone poles.
50 cords of shingle bolts.

On vacant Dominion Lands, permits were issued to cut:—

2,000 lineal feet building logs.
30 roof poles.
1,000 fence rails.
300 " posts.

The following timber was cut without authority, and trespass dues levied thereon:—

41,000 feet b.m. sawlogs.
463 lineal feet piling.
56 poles.
1,409 fence posts.
116 thousand shingles.
1 cord shingle bolts.

Schedule "C," portable saw-mills and mills operating under government permit in this district.—None.

Schedule "D," general office return, showing comparison with previous year.

All of which is respectfully submitted.

T. J. WADMAN,
Crown Timber Agent.

SCHEDULE "A."—Statement of Receipts from Crown Timber Agency at Revelstoke, for Fiscal Year ending March, 31, 1916.

Month.	Bonus under License.	Ground Rent under License.	Royalty Dues under License.	Permit Fees, Dues and Rental.	Seizures.	Total Timber.	Grazing Land Rental.	Hay Permits, Fees and Dues.	Fire-guarding Fees.	Registration Fees.	Total.	Remarks.
1915.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	
April		1,647 50	3 53			1,651 03			52 75		1,703 78	
May		766 50		17 00		783 50					783 50	
June		115 20		31 90		147 10			5 10		152 20	
July		0 65		59 15	58 40	118 20				7 00	125 20	
August				27 75		27 75					27 75	
September			1,009 04	0 75		1,009 79					1,009 79	
October		8 00	81 90	1 00	7 05	97 95	3 20				101 15	
November		157 09	4,521 08	21 22		4,699 39			279 62		4,979 01	
December		1,436 02		4 00		1,440 02			2,404 41		3,844 43	
1916.												
January			29 92	1 75		31 67				12 00	43 67	
February			5,790 90	4 00	126 00	5,920 90			1,739 25	51 00	7,711 15	
March				31 00		31 00				23 00	54 00	
Totals		4,130 96	11,436 37	199 52	191 45	15,958 30	3 20		4,481 13	93 00	20,535 63	
Collected at Head Office.												
1915.												
April												
May												
June												
July												
August												
September												
October												
November												
December												

1916.												
January		99 36				99 36					99 36	Timber Berth rental $99.36.
February												
March												
Totals		99 36				99 36					99 36	
Grand totals		4,230 32	11,436 37	199 52	191 45	16,057 66	3 20		4,481 13	93 00	20,634 99	

SCHEDULE "B."—Showing the Saw-mills operating within the Revelstoke Agency under Government License, for the Fiscal Year ending March 31, 1916.

No.	Mill-owner.	Location of Mill.	Berth No.	Kind of Power.	Horse Power.	Capacity per 10 hours.	Species of Timber cut.	Lumber. Manufactured Ft. B.M.	Log Count. Logs Cut.	Average per Log Ft.B.M.	Number of Returns made.	Date of Last Return.	Remarks.
1	Columbia River Lumber Co.	Golden, B.C.	15	Electric	1,200	200 M	Spruce 60%. Cedar 25%. Fir and Balsam 15%.	21,076,653	211,369	99·7 ft.	4	March 31, '16.	
2	G. B. Ferguson & Co.	Six Mile Creek	116	Steam	200	50 M					4	March 31, '16.	No operations during year.
3	Forest Mills Of B. C. Ltd.	No mill	113				Cedar				4	Mareh 31, '16.	Mill destroyed by fire in April, 1915.
			127				Cedar				4	Mareh 31, '16.	670½ eords of shingle bolts. 142,491 fence posts. 213½ cords of eordwood 22 ears waste filling.

SESSIONAL PAPER No. 25

SCHEDULE "D."—General Office Return of the Crown Timber Agency, Revelstoke, for Fiscal Year ending March 31, 1916.

Particulars.	Number, etc.	As compared with previous year. — Increase.	As compared with previous year. — Decrease.
Letters received	(Included with Land Office letters.		
Letters written	(See Comparative Statement Form No. 22		
Permits subject to dues issued	6	.....	4
Free permits issued	60	.....	12
Seizures made	4	.....	10
Mill returns received and verified	308	.....	17
Mills operating under government license	1	.....	2
Mills operating under government permits	.....	.....	.....
Quantity of lumber manufactured, under license	21,076,653	14,963,685	.....
Quantity of lumber sold, under license	.....	.....	.....
Quantity of lumber on hand, under license	.....	.....	.....
Hay permits issued	None.	.....	2

No. 31h.

WINNIPEG.

This is the annual report of my office for the year ended March 31, 1916, appended to which will be found the following statements:—

"A."—Business transacted at the several Crown Timber offices and amount of revenue collected.

"B."—Amount of lumber and other products of timber cut and disposed of by licensees and holders of timber permits.

"C."—Amount of timber covered by permits issued to actual settlers.

"D."—Number of hay permits issued, tonnage covered thereby and amount of revenue collected thereon.

The past winter was an ideal one for lumbering operations and those millmen who engaged in logging obtained satisfactory results.

The total manufacture of lumber during the past year by licensees of Dominion timber berths and holders of sale permits amounted to 248,423,811 feet b.m. as against 199,458,953 feet b.m. for previous year.

The output of sawlogs last winter was 3,017,030 pieces as compared with 1,948,935 pieces for the previous winter.

While the demand for lumber on the prairie has improved somewhat since the opening of the new year, leading to slightly increased prices, a number of our lumbermen still find it necessary to look to the American market to dispose of their surplus stocks, some of the lumber exported reaching as far as the Eastern States while much of it went on the Chicago market.

I beg respectfully to direct your special attention to the attached statements "A," "B," "C," and "D," above referred to, which are prepared to show the extent of business of the present year, which is most satisfactory when compared with that of the past year.

E. F. STEPHENSON,
Chief Inspector C. T. Agencies.

STATEMENT "A."—Summary of work performed at the respective Crown Timber Offices during Fiscal Year ended March 31, 1916.

Agency.	Timber and Grazing.								Forestry.				School Lands.				Revenue.
	Bonus.	Ground Rent.	Royalty on Sales.	Timber Permits issued.	Timber Seizures.	Hay Permits.	Grazing Rentals.	Sundries.	Permit and Land Rentals.	Seizures.	Grazing Rentals.	Hay Permits.	Timber Permits.	Hay Permits.	Grazing Permits.	Sundries.	
Battleford				411		187	178	72	369		44	18	3	342	126	12	$ 5,354 37
Brandon						105	5		65	6	99	145		85	27		5,752 55
Calgary		35	35	147	12	35	260	1	93	10	34	15		757	421		34,781 06
Dauphin				227	20	415	31		890	48	27	203	13	241	44	2	9,481 62
Edmonton	3	50	63	1,412	59	570	57	587	17	4	8	31	11	517	142		110,510 99
Estevan						14	19		20	19	7	20		123	65		1,177 18
Grande Prairie				318	9	143	34	34						23	21	1	1,390 91
Grouard				183		68	6		1					20	6		836 86
Humboldt		1		101	16	210	53	10						345	261	8	3,897 21
Kamloops		70	15	373	15	13	359	15	7	9	7	7					17,429 74
Lethbridge				63		4	189		162	1	54	28		57	140	5	6,385 41
Maple Creek				284		338	987	19	263	2		39	447	238	10		21,276 28
Medicine Hat				32		222	840		419	1	4	64		183	128		30,410 91
Moose Jaw				22		74	601		77	1	178	50		751	305		9,731 41
New Westminster	6	177	136	183	23		2										77,109 69
Peace River				388	1		5								11		1,122 44
Prince Albert	4	13	21	631	28	363	127	1	417	10	12	57	20	349	89	1	72,796 99
Red Deer				141	2	100	98	26	31	1	1		3	468	203	21	6,666 23
Regina						8			80	19		32	5	408		8	1,514 85
Revelstoke		97	11	66	4		31	10									20,535 63
Saskatoon				15		101	50	3	93		10	8		551	191	23	3,778 13
Swift Current				41		131	278	3	1		7	15		543	394		12,920 31
Yorkton				101	1	74	6		193	12	10	77		237	78		2,548 86
Weyburn				2	1	72	57							312	123	6	3,005 66
Winnipeg		120	77	1,194	64	843		25	1				43	624	2	9	52,215 71
Totals	13	563	358	6,335	255	4,091	4,273	806	3,202	133	502	805	98	7,320	3,012	107	$512,640 90
For previous year	10	576	343	10,381	333	3,137	3,302	793	4,184	58	207	981	195	4,837	1,353	61	$383,149 58

STATEMENT "B."—Showing Manufacture and Sale of Timber Products Cut by Holders of Timber Berths on Dominion Lands Cut under Yearly License during the Fiscal Year ended March 31, 1916.

Agency.	Lumber Ft. B.M.			Lath.			Ry. Ties.	Shingles.		Piling & Mining Props.etc.	Saw Logs.		
	Manf'd.	Marketed	On hand.	Manf'd.	Sold.	On hand.	Sold.	Manf'd.	Sold.	—	Pcs. cut.	Manf'd.	On hand.
Calgary	9,182,539	19,686,847	11,642,536	.....	238,725	3,950	.....	.....	.....	.....	105,547	213,877	497,750
Edmonton	15,807,960	24,232,392	11,121,564	2,349,415	4,182,495	1,142,580	73,678	22,000	.....	.....	436,547	340,123	333,065
Kamloops	10,420,522	10,420,522	not known	.....	.....	.....	.....	215,000	215,000	.....	105,079	105,079	not known
New Westminster	70,672,492	70,672,492	"	.....	.....	.....	11,700	180,720,000	180,720,000	56,277	107,340	107,340	3,289
Prince Albert	72,557,328	87,861,178	25,307,857	25,291,300	20,587,700	17,299,400	2,853	.....	.....	.....	1,405,308	1,312,090	1,961,803
Revelstoke	21,076,653	21,076,653	not known	.....	.....	.....	.....	3,350,000	3,350,000	142,491	211,369	211,369	not known
Winnipeg	22,304,987	34,401,309	12,004,918	5,504,152	5,292,260	1,147,217	.....	61,000	61,000	.....	583,396	459,057	637,478
Totals	222,022,481	268,351,393	.....	33,144,867	30,801,180	19,593,147	88,231	184,368,000	184,346,000	198,768	2,554,586	2,748,935	.....

STATEMENT "B."—Showing Manufacture and Sale of Timber Products Cut by Holders of Timber Berths on Dominion Lands Cut under Yearly License during the Fiscal Year ended, March 31, 1916.—*Concluded.*

Agency.	TIMBER CUT COMMERCIALLY UNDER TIMBER PERMITS ON DOMINION AND SCHOOL LANDS.												
Calgary	2,686,943	4,097,492	1,133,991	.....	.....	.....	25,000	.....	.....	1,456,546	179,710	162,973	62,977
Edmonton	6,302,555	11,601,803	5,252,346	.....	.....	.....	754,262	5,960,000	4,044,500	318,906	105,976	214,621	63,267
Kamloops	9,119,712	8,370,000	749,712	.....	.....	.....	23,192	4,930,000	4,930,000	11,268	65,000	65,000	not known
New Westminster	2,578,102	2,000,000	578,102	.....	.....	.....	.....	73,525,000	65,000,000	199,246	6,000	6,000	"
Prince Albert	2,520,552	2,749,531	750,445	.....	.....	.....	290,050	.....	.....	180,000	36,464	54,826	16,293
Revelstoke	265,000	265,000	Nil	.....	.....	.....	120	250,000	250,000	8,115	260	260	
Winnipeg	2,612,208	2,892,075	2,761,666	.....	.....	.....	109,090	.....	.....	179,053	69,034	58,465	24,323
Totals	26,401,330	31,975,901	11,226,262	.....	.....	.....	1,201,714	84,665,000	74,224,500	2,353,134	462,444	562,145	166,860
Grand total	248,423,811	300327,294	33,144,867	.....	30,801,180	19,593,147	1,289,945	269,033,000	258,570,500	2,551,902	3,017,039	3,311,080	
Year 1914-1915	199458,903	185,416,424	22,742,703	.....	26,666,726	3,413,775	256,755	.....	.....	916,055	1,948,935	2,900,000	

STATEMENT "C."—Timber Material covered by Permits issued at the respective Agencies, principally to Homestead Settlers during the year ended March 31, 1916.

Agency.	Lumber & Logs Ft. B. M.	Fence Rails.	Roof Poles.	Fence Posts.	Cords Cordwood.	Railway Ties.	Telegraph and Telephone Poles.	Round Timber.	Cords Shingle Bolts.
Battleford	2,492,086	151,700	61,062	74,625	4,973				
Brandon	67,904			645	823				
Calgary	13,880,800	57,000	4,770	30,045	3,116	25,000		17,000	
Dauphin	2,850,220	6,787	400	43,302	7,048				
Edmonton	9,272,339	1,542,318	290,715	345,902	3,650	752,842	1,500	303,906	
Estevan	4,800		1,178	500	119				
Grande Prairie	1,692,783	453,620	83,870	43,581	2,915				
Grouard	1,661,545	284,125	51,675	44,525	2,710				
Humboldt	490,350	4,200	1,710	7,750	125				
Kamloops	9,306,122	33,059	7,898	161,505	5,032	16,752	3,423	5,975	986
Lethbridge	134,336	10,550	4,108	13,161	2,220			37,579	
Maple Creek	5,150,566	85,891	234,889	155,705	11,626				
Medicine Hat	419,760	95,360		35,680	1,458				
Moose Jaw		1,640	700	2,390	1,140				
New Westminster	316,258				190			86,774	11,113
Peace River	2,174,727	575,525	102,009	19,159	3,187				467
Prince Albert	4,649,860	814,580	184,753	204,343	23,655			46,000	
Red Deer	178,232	18,655	4,990	58,425	2,628	108	20		
Regina			500	3,400	634				
Revelstoke	292,315	1,315	30	20,500	2,395	1,200	660		50
Saskatoon	91,568	9,350	2,565	12,940	987				
Swift Current		3,400	2,190	5,190	128				
Winnipeg	4,403,372	117,000	41,390	291,600	70,985	109,000	5,025	30,000	
Weyburn		100	200	477	10				
Yorkton	1,663,066			19,100	1,348				
Totals	61,193,009	4,266,175	1,081,602	1,594,450	153,102	904,902	10,628	526,234	12,616
Previous year	64,895,838	6,139,376	1,424,404	2,291,766	220,169	585,196	12,639	4,396,922	

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STATEMENT "D."—Showing the number of Hay Permits issued at the several Crown Timber Offices and the amount of hay covered thereby for the year ended March 31, 1916.

Agency.	DOMINION LANDS.		SCHOOL LANDS.		FORESTRY LANDS.		Revenue
	Pts. issued.	Hay.	Pts. issued.	Hay.	Pts. issued.	Hay.	
	No.	Tons.	No.	Tons.	No.	Tons.	$ cts.
Battleford	187	3,363	342	5,713	18	426	1,358 08
Brandon	105	1,403	85	970	145	2,085	632 10
Calgary	35	489	757	14,956	14	372	1,600 75
Dauphin	415	6,245	241	3,192	203	3,350	1,812 95
Edmonton	570	5,150	517	607	26	973	1,808 97
Estevan	14	166	123	1,138	20	461	271 08
Grande Prairie	143	2,461	23	328			336 30
Grouard	68	1,458	20	588			238 70
Humboldt	210	2,180	345	5,087			956 30
Kamloops	13	129			7	130	18 15
Lethbridge	4	183	57	678	27	204	87 95
Maple Creek	338	4,103	447	5,236	39	1,920	1,044 28
Medicine Hat	222	6,238	183	1,493	64	1,461	530 75
Moose Jaw	74	877	688	8,697	46	9 61	1,307 30
New Westminster							
Peace River							
Prince Albert	258	3,836	349	4,007	57	1,183	1,403 05
Red Deer	100	2,735	461	10,441			1,374 40
Revelstoke							
Regina	8	225	408	6,881	32	1,417	1,274 10
Saskatoon	102	2,170	552	9,460	8	101	1,491 20
Swift Current	131	1,570	545	5,967	15	252	994 70
Winnipeg	843	11,961	624	8,866			2,851 02
Weyburn	73	1,417	312	4,889			896 35
Yorkton	74	1,243	237	2,559	77	2,336	892 00
	3,987	58,542	7,316	101,753	798	17,632	23,180 48
Previous year	3,133	72,603	4,269	82,833	623	10,433	18,633 44
Increase over last year							4,547 04

No. 31i.

CALGARY.

Month.	Expenses.	Insp.	Miles W.	Rail.	Days O.D.	Days Hq.
1915.	$ cts.					
April	123 00	57	390	234	0	14
May	262 20	341	844	424	0	5
June	236 65	261	725	222	0	4½
July	245 15	378	739	360	0	8
August	297 70	580	821	782	0	2½
September	287 90	126	609	975	0	4
October	226 85	140	769	633	0	8
November	333 90	217	890	468	0	3
December	274 40	210	727	962	0	5
1916						
January	119 85	227	280	444	0	13
February	246 25	67	430	1,718	0	4
March	212 59	826	589	1,153	0	5½
	2,866 44	3,430	7,813	8,375	0	76¼

Contingent cheque No.	1338	$400 00
" "	4552	300 00
" "	4820	250 00
" "	5146	250 00
" "	5375	250 00
" "	5598	300 00
" "	5721	300 00
" "	Received by wire	300 00
" "	236	300 00
" "	463	200 00
Total amount received		$2,850 00
Expenses during the year		$2,866 44
Amount due from the department		16 44

The stock industry is steadily improving. The rancher invariably provides winter feed, consequently in the spring the stock are much better nurtured.

A large number of the old leaseholders are having their leases brought under the operation of the present grazing regulations, which secures them a more permanent standing.

GEO. H. CLOAKLY,
Inspector of Ranches.

No. 31j.

MAPLE CREEK, Sask.

SIR,—Southwestern Saskatchewan and southeastern Alberta during the past season harvested a wonderful wheat crop yielding 65 and even 70 bushels to the acre being recorded in some places, while a return of 50 bushels to the acre was quite common and a very exceptional case where the yield was not over 40 bushels.

The season was also favourable for stock on the range and cattle, horses and sheep did exceptionally well; also an abundant supply of fodder was to be had for winter feeding which proved very fortunate as the month of January and the first half of February were the most severe experienced in the country for some years, and all kinds of stock required feeding; however, mild weather set in about February 15, and the snow nearly all disappeared, so that the losses among stock were not larger than usual.

Owing to the exceptional crop of 1915, granting of leases for grazing purposes is getting more difficult to settle satisfactorily, as much land that heretofore was looked on as worthless from an agricultural standpoint is now being entered for that purpose; also owing to the settlement and the small amount of land that is available for leasing, being widely separated, thereby necessitating more travelling, the expense of inspection is increasing out of proportion to the area of the land leased.

RUSSELL SEXSMITH,

Inspector of Ranches.

SUMMARY of work performed for the year ending March 31, 1916.

How employed.	No. of quarter-sections inspected.	No. Special Investigations.	Miles Travelled.		Days at Hdqts.	Days off Duty.	Total Amount Expenses.
			By Rail.	By Wagon.			
							$ cts.
April	0	.....	0	0	26	0	Nil
May	194	.....	732	475	5	0	203 60
June	129	.....	148	507	10	0	153 95
July	139	.....	406	551	7	0	212 15
August	288	.....	1,114	648	4	0	256 85
September	25	.....	616	210	8	8	83 30
October	66	.....	0	241	3	14	98 05
November	153	.....	370	424	11	0	125 95
December	64	.....	472	305	12	0	148 95
January	0	.....	170	0	24	0	8 00
February	0	.....	0	0	0	24	60
March	34	.....	.....	144	13	8	51 10
	1,102	.....	4,028	3,505	123	54	1,342

No. 31k.

MINNEDOSA, MAN.

The volume of business has increased considerably over the previous year. As this work can not be done satisfactorily in the winter months owing to the ground being covered with snow, all of the inspection work was done between April 1 and December 4. In that time I made one hundred and fourteen (114) inspections in the Minnedosa district, and sixty-five (65) in the Prince Albert district. In all there were recommended for grazing purposes, fifty thousand three hundred and forty acres (50,340) and for other purposes eleven thousand and eight hundred (11,800) acres.

H. L. BOWYER,
Inspector of Ranches.

No. 31l.

MOOSEJAW, SASK.

This is a report of work done from this office during the year ending March 31, 1916, as follows:—

Number of inspections reported on	247
" quarter-sections covered by reports	1,044
" " recommended to be leased	800
" miles travelled, by rail	7,545
" " " by team	4,703
" days on the road	145
" letters received	1,193
" " written	830
" callers at office on business	1,005
" days engaged on Dominion Lands office work in connection with registration of seed grain and relief liens, from January 13 to March 25, inclusive	63

G. H. LYDEARD,
Inspector of Ranches.

No. 31m.

PRINCE ALBERT.

My inspections were made principally in the Battleford district, as there seems to be more applications for leases in that district than in the Prince Albert district, although this spring it is opening up considerably, as the people are understanding the advantages derived from the grazing leases.

There was a bountiful crop, wheat yielding as high as 42 bushels to the acre and oats as high as 100 bushels to the acre; there were exceptional cases where the yield went over this quantity. Although the winter season was exceptionally long and severe the stock has come out well and in good condition. I have heard no complaints from any of the settlers being short of fodder. I may state that the cattle industry all through my district is improving, particularly in the Battleford district, where mixed farming is being gone into by the farmers. I consider that the grazing regulation is giving an impetus to stock-raising, some of the farmers having from 50 to 400 head of stock, principally cattle. Although there are some parts of my district suitable for sheep-raising very few farmers have gone into this industry on account of the wolves.

In this district there is a large area of rough land unfit for agricultural purposes, with abundance of hay. I might safely predict that northern Saskatchewan in a few years will be the banner province for stock.

There is a burning question throughout the district, in regard to herdlaw. From my observation travelling through herdlaw districts I would say that it was detrimental to stock, as the cattle are herded all day, and corralled at night and not let out until 7 o'clock the following morning. During flytime, night is the time they should feed, after the flies go down. I can see the difference in the condition of the cattle where herdlaw is in force.

JNO. E. SINCLAIR,
Ranch Inspector.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Total.
Inspections made	12	25	21	28	14	9	1	0	1	110
Miles driven	303	465	626	500	500	200	30	0	60	2,684
Miles by rail	642	610	785	366	480	100	358	0	430	3,771
Money received	$ 150 00	$ 150 00	$ 150 00	$ 150 00	$ 150 00	$ 150 00	$ 50 00	00	$ 00	950 00
Expenditure	105 55	127 35	164 21	116 61	135 65	57 55	31 45	1 00	33 75	773 12

Balance sent to Ottawa by Bank of Commerce, Draft..... $ 176 83

No. 32.

REPORT OF THE SUPERINTENDING ACCOUNTANT.

Statements of revenue collected from various sources during the fiscal year ended March 31, 1916, are as follows:—

A.—Dominion lands, including Yukon	$2,443,479 92
B.—Ordnance lands	5,997 98
C.—School lands	937,893 37
D.—Registration fees, Yukon	908 15
E.—Fines and forfeitures, N.W.T.	92 50
F.—Casual revenue	28,002 62
G.—Seed grain and relief repayments	2,525,528 50
H.—Fines under Immigration Act	2,982 71
I.—Chinese immigration revenue	19,389 00
J.—Sales of land, special account	398,597 70
	$6,362,872 45

A statement of revenue on account of Dominion Lands (marked K) shows the receipts monthly, classified under subheads.

Statement (marked L) shows a comparison between the receipts on account of revenue of the previous twelve months.

GEO. D. POPE,
Acting Superintending Accountant.

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A.—Dominion Land Revenue (Cash and Scrip) for the Fiscal Year ended March 31, 1916.

Agencies.	Cash.	Scrip.	Total.
	$ cts.	$ cts.	$ cts.
Yukon Territory—			
Sales of land	1,650 97		1,650 97
Rentals of land	7,078 40		7,078 40
Map sales, office fees, etc	65 50		65 50
Timber dues	11,562 83		11,562 83
Hay permits	126 00		126 00
Mining fees	55,011 00		55,011 00
Export tax on gold	111,457 19		111,457 19
Free certificates for export of gold	82 50		82 50
Hydraulic leases	2,850 63		2,850 63
Homestead fees	100 00		100 00
Coal royalty and fees	5 00		5 00
Interim receipt account	285 76		285 76
Dredging leases	770 65		770 65
	191,046 43		191,046 43
Dominion Lands Agencies—			
Arctic	3,758 00		3,758 00
Battleford	55,711 86		55,711 86
Brandon	2,743 80		2,743 80
Calgary	152,722 84		152,722 84
Dauphin	21,323 00		21,323 00
Edmonton	59,283 32		59,283 32
Fort McMurray	390 00		390 00
Estevan	1,503 38		1,503 38
Grande Prairie	13,441 64		13,441 64
Grouard	4,896 71		4,896 71
Humboldt	10,962 26		10,962 26
Kamloops	8,617 70		8,617 70
Lethbridge	73,478 45		73,478 45
Maple Creek	142,412 66		142,412 66
Medicine Hat	86,095 35		86,095 35
Moosejaw	194,450 25		194,450 25
New Westminster	3,198 74		3,198 74
Peace River	4,420 56		4,420 56
Prince Albert	22,018 01		22,018 01
Red Deer	45,108 28		45,108 28
Regina	5,178 89		5,178 89
Revelstoke	4,735 00		4,735 00
Saskatoon	152,696 46		152,696 46
Swift Current	183,355 02		183,355 02
Weyburn	64,552 31		64,552 31
Winnipeg	37,013 52		37,013 52
Yorkton	10,498 98		10,498 98
	1,364,566 99		1,364,566 99
Crown Timber Agencies—			
Battleford	1,069 11		1,069 11
Brandon	116 20		116 20
Calgary	23,788 98		23,788 98
Dauphin	7,423 43		7,432 43
Edmonton	103,496 01		103,496 01
Estevan	103 60		103 60
Grande Prairie	522 86		532 86
Grouard	448 36		448 36
Humboldt	859 74		859 74
Kamloops	8,651 03		8,651 03
Lethbridge	448 55		448 55
Maple Creek	430 55		430 55
Medicine Hat	374 20		374 20
Moosejaw	33 50		33 50
New Westminster	78,043 16		78,043 16

A.—Dominion Land Revenue (Cash and Scrip) for the Fiscal Year ended March 31, 1916—*Continued.*

Agencies.	Cash.	Scrip.	Total.
	$ cts.	$ cts.	$ cts.
Peace River	937 51		937 51
Prince Albert	71,811 07		71,811 07
Red Deer	1,931 99		1,932 99
Regina	264 30		264 30
Revelstoke	16,150 66		16,150 66
Saskatoon	69 08		69 08
Swift Current	10 50		10 50
Weyburn	48 50		48 50
Winnipeg	49,638 49		49,638 49
Yorkton	717 47		717 47
	367,397 85		367,397 85
Miscellaneous.—			
Rocky Mountains Park	33,224 45		33,224 45
Jasper Park	1,566 61		1,566 61
Yoho Park	442 27		442 27
Waterton Lakes Park	1,393 80		1,393 80
Elk Island Park	11 50		11 50
Buffalo Park	219 15		219 15
Glacier Park	583 50		583 50
Revelstoke Park	25		25
Moose Mountain Buffalo Park	52 00		52 00
Survey fees	6,977 35		6,977 35
Irrigation fees	542 00		542 00
Irrigation sales	16,872 15		16,872 15
Map sales, office fees, etc	8,647 68		8,647 68
Fees, Board of Examiners, D.L.S	470 00		470 00
Mining fees	11,071 00		11,071 00
Grazing lands	118,955 02	160 00	119,115 59
Grazing lands (improvements)	462 52		462 52
Hay permits	9,775 37		9,775 37
Coal Lands	175,567 51		175,567 51
Dredging leases N. W. T	710 00		710 00
Stone Quarries	9,053 27		9,053 27
Rent of water-power	1,862 00		1,862 00
Suspense account	2,258 87		2,258 87
Sales of land	20,448 56		20,448 56
Petroleum	94,535 37		94,535 37
Sand, stone and gravel	1,030 32		1,030 32
Forestry branch, sale of trees, etc	2,085 01		2,085 01
Miscellaneous	757 30		757 30
Improvements	52 50		52 50
Rentals	967 32		967 32
	520,468 65	160 00	520,628 65
	2,443,479 92	160 00	2,443,639 92
Less—Refunds	143,929 45	13 12	143,942 57
	2,299,550 47	146 88	2,299,697 35

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B.—Statement of Ordnance Lands Revenue for the Fiscal Year ended March 31, 1916.

1915—	
April	$ 149 00
May	381 19
June	2,514 20
July	1,267 49
August	10 75
September	25 50
October	62 00
November	69 00
December	1,125 88
1916—	
January	240 62
February	142 05
March	10 30
	$5,997 98
Less refunds	$20 96
	$5,977 02

C.—Statement of Receipts on Account of School Lands for the Fiscal Year ended March 31, 1916.

Month.	Manitoba School Lands.	Saskatchewan School Lands.	Alberta School Lands.	Total.
1915.	$ cts.	$ cts.	$ cts.	$ cts.
April	3,374 15	9,636 85	12,455 77	25,466 77
May	23,092 22	23,523 70	14,039 94	60,655 86
June	27,549 13	88,469 40	20,359 55	136,378 08
July	7,459 69	26,169 96	23,788 78	57,418 43
August	7,419 02	3,461 50	6,626 21	17,506 73
September	3,825 34	1,820 92	4,671 49	10,317 75
October	13,355 20	31,313 95	22,694 46	67,363 61
November	61,164 06	90,760 72	34,550 82	186,475 60
December	53,486 80	79,984 25	21,657 30	155,128 35
1916.				
January	22,950 28	49,511 72	19,856 56	92,318 56
February	8,353 55	38,227 62	17,071 35	63,652 52
March	13,267 71	32,196 64	16,818 76	62,283 11
	245,297 15	475,077 23	214,590 99	934,965 37

D.—STATEMENT of Registration Fees in the Yukon Territory for the Fiscal Year ended March 31, 1916.

Month.	District.	Registrar.	Amount.
1915.			$ cts.
April	Yukon	A. E. Lamb	22 00
May	"	"	93 00
June	"	"	53 10
July	"	"	70 50
August	"	"	76 00
September	"	"	106 50
October	"	"	126 00
November	"	"	132 75
December	"	"	17 00
1916.			
January	"	"	38 25
February	"	"	54 05
March	"	"	117 00
Total			908 15

E.—STATEMENT of Fines and Forfeitures in the Northwest Territories for the Fiscal Year ended March 31, 1916.

Month.	From whom received.	Amount.
1915.		$ cts.
September	J. W. Phillips, J.P.	10 00
October	Charles A. Rheault, J.P.	12 50
"	"	10 00
"	"	5 00
"	"	50 00
1916.		
February	J. G. Tweed	5 00
		92 50

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F.—STATEMENT of Casual Revenue for the Fiscal Year ended March 31, 1916.

Name.	Particulars.	Amount.
		$ cts.
Supt. Rocky Mountains Park	32 cheques not used as per list dated April 12, 1915—Dominion Lands and Parks—Parks	186 02
A. D. L. Grand Prairie	Refund proceeds sale of old democrat—Dominion Lands and Parks—Contingencies	53 00
A. Wilking	Cheque No. 11432 dated May 15th, 1914, not used—Civil Government Contingencies	94 27
Great Northern Ry	Refund for two pieces of elevator machinery, and freight charges, shipped by Geo. A. Cook to J. M. MacLachlan, Watertown, S.D.—Immigration Expenses	62 45
Local Council Yukon	Refund to cover cost of loose leaf binders supplied in 1913—Expenses of Government—Yukon Territory	113 04
A. D. L. Humboldt	Sale of old fixtures in Land Office—Dominion Lands and Parks—Contingencies	41 00
W. J. Boulton	Refund amount received from C.P.R. for unused tickets which were charged for in Mr. Boulton's 1914 survey account—Dominion Lands and Parks—Surveys	3 40
C. J. Musante	Refund balance of advance—Dominion Lands and Parks—Protection of Timber	14 76
C. M. O'Neil	Refund on account of advances for expenses—Dominion Lands and Parks—Irrigation Surveys	30 00
G. L. Lonergan	Refund from C.N.R. for unused portions of railway tickets—Dominion Lands and Parks—Surveys	2 40
Brazeau Collieries, Ltd	Cost of survey of Nordegg townsite by A. L. Cumming in 1913—Dominion Lands and Parks—Surveys	438 50
H. W. Porteous	Both cheques not used—Dominion Lands and Parks—Protection of Timber	100 00
J. L. Dodge	Both cheques not used—Dominion Lands and Parks—Protection of Timber	100 00
J. Bruce Walker	Refund by Albert Roth on account of repatriation of expenses of his family—Relief of Distressed Canadians	20 78
R. Sexsmith	Balance unexpended on account of advance, March 31, 1915—Dominion Lands and Parks—Contingencies	225 58
M. C. Hendry	Balance on hand March 31, 1915—Dominion Lands and Parks—Water-power Investigations	745 75
Thos. H. Dunn	Refund balance on hand of amount advanced for expenses—Dominion Lands and Parks—Water-power Investigations	986 93
Canadian Patriotic Fund	Refund of amount over-contributed from H. W. Thomas's salary—Dominion Lands and Parks—Parks	2 83
R. H. Palmer	Refund balance on hand March 31, 1914—Dominion Lands and Parks—Protection of Timber	6 63
K. H. Smith	Refund on account of advance—Dominion Lands and Parks—Water-power Investigations	1,786 99
R. G. Swan	Balance on hand March 31, 1915—Dominion Lands and Parks—Water-power Investigation	15 00
F. H. Peters	Refund account stationery January, 1915—Dominion Lands and Parks—Irrigation	6 25
C. P. Railway Co	Refund unused portion of return ticket Winnipeg to Wallaceburg, used only as far as Windsor. Account of W. J. Boulton—Dominion Lands and Parks—Surveys	16 35
C. H. Attwood	Balance on hand March 31, 1915—Dominion Lands and Parks—Water-power Investigation	102 10
Dominion Police, Ottawa	Refund of amounts paid for translation of letters, January to March, 1915, Winnipeg—Immigration Expenses	47 00
James Maus	Balance on hand March 31, 1915—Immigration Expenses	70 88
B. W. Waugh, D.L.S.	Balance account Survey of Block outlines, 1913-14—Dominion Lands and Parks—Surveys	375 77
P. R. A. Belanger, D.L.S.	Balance account Inspection Surveys, Seasons 1913 and 1914—Dominion Lands and Parks—Surveys	89 94
E. W. Hubbell, D.L.S.	Balance account Inspection Surveys, season 1913—Dominion Lands and Parks—Surveys	164 86
E. E. Colbeck	Refund overpaid for rent of P.O. Box, June 1, 1912 to June 1, 1913. *re* Winnipeg cheque No. 10086 of March 22, 1915—Immigration Contingencies	3 00

F.—STATEMENT of Casual Revenue for the Fiscal Year ended March 31, 1916.—*Con.*

Name.	Particulars.	Amount.
		$ cts.
Turner Townsend	Proceeds of sale of typewriter—Yukon Appropriation	20 00
R. Geo. Mackey	Balance unexpended on account Contingencies 1914-15—Dominion Lands and Parks—Contingencies	60 99
R. F. MacDonald	Refund on account repatriation expenses of his wife—Relief of Distressed Canadians	3 00
W. V. Bennett	Balance on hand March 31, 1915—Immigration Expenses	103 49
Topley Co.	Refund overcharge Royal Process Plates 1914-15—Dominion Lands and Parks—Water-power Investigation	6 00
C. M. O'Neil	Refund on account expenses 1914-1915—Dominion Lands and Parks—Irrigation Surveys	30 00
G. T. Railway Co.	Refund on account freight charges January and February 1915—Immigration Expenses	21 99
A. Deviney	Refund of amount paid in error November 1913, for prepaid bonus tickets—Immigration Expenses	40 00
A. F. George	Refund of costs allowed by Court in fair case—Immigration Expenses	42 20
C. P. Railway Co.	Refund railway fares Toronto to Winnipeg of J. S. Anderson and E. Dalmen, Scandanavian editors paid by W. J. White—Immigration Expenses	56 30
Nason & Major	Refund expenses incurred re Nathan Agsanovitch—Relief of Distressed Canadians	20 07
R. MacDonald	Refund on account repatriation of his wife—Relief of Distressed Canadians	5 00
International Grenfell Assn.	Unexpended Balance of grant 1914-1915—Dominion and Parks—Protection of Reindeer Herd	341 18
Government Yukon Territory	Territorial Treasurer Dawson refund to pay for telegrams erroneously charged to Yukon Expense of Government in 1914-1915—Yukon Appropriation	13 60
Weyburn Inspector Hober	Sale of old horse—Dominion Lands and Parks—Contingencies	75 00
S. Wright	Refund on account expenses for repatriation of his daughter—Relief of Distressed Canadians	5 00
C. M. O'Neill	Refund on account advance for expenses 1914-1915—Irrigation Surveys	30 00
Mrs. B. Brush	Refund of overcharge on sleeper berth, *re* Immigration voucher 2297 of Nov. 14—Immigration Expenses	50
Mr. Olsen	Refund *re* use of long distance telephone—Immigration Expenses	1 00
J. M. McGovern	Port Arthur Telephones Rebate on house telephone of Mr. McGovern—Immigration Expenses	1 20
C.P. Railway Co.	For 4 boxes of grass samples—Immigration Expenses	8 00
Henry Power	Refund of overpayment of salary while reliving J. R. Chisholm at North Battleford in April 1914—Immigration Expenses	10 50
W. N. Miller	Overpayment to D. A. MacDonald through Protection of Timber, in August, 1914—Dominion Lands and Parks Forestry	2 50
Department of Public Works	Refund on account light, rent offices and water rates—Immigration Expenses	128 53
C.P. Railway Co.	Refund on account expenses *re* L. Desimore, a stowaway—Immigration Expenses	9 10
Department of Public Works	Refund on amount paid for electric lamps, Swift Current Land Office—Dominion Lands and Parks—Contingencies	9 00
Rec. General	Amount refunded by Paul Howard on account amount overpaid him for salary from Dec., 1914 to Feb., 1915—Immigration Salaries	75 00
Grand Trunk Railway System	Refund freight charges for April, May, June and July, 1913—Immigration Expenses	187 78
C.P. Railway Co.	Refund on account salaries of Inspectors on Selkirk tunnel—Dominion Lands and Parks—Parks	1,295 15
S. Wright	Refund on account repatriation of his daughters—Relief of Distressed Canadians	7 71
Thos. Wilson	Being refund by R. MacDonald on account of repatriation expenses of his wife, Margaret MacDonald—Relief of Distressed Canadians	5 00
A. T. Tait	Refund on account travelling expenses of previous fiscal year—Immigration Expenses	40 35

F.—STATEMENT of Casual Revenue for the Fiscal Year ended March 31, 1916.—*Con.*

Name.	Particulars.	Amount.
		$ cts.
L. Schellenberger	Refund of overcharge for meals while not on duty in December, 1914—Immigration Expenses	1 50
Public Works Department	Refund of account for furniture at Montreal paid by this department—Immigration Expenses	18 08
William C. Johnston	Refund of overpayment of 1 day's services (July 28, 1914) as per Winnipeg cheque 1155 of August 4,1914—Immigration Expenses	2 50
J. J. Goodman	Refund on account travelling expenses 1914-1915—Immigration Expenses	30 00
P. A. Woodlock	Proceeds of sale of old buggy, Homestead Inspector Woodlock, Calgary Agency District—Dominion Lands and Parks—Contengencies	24 75
Inspector Brandts	Proceeds of sale of old harness—Dominion Lands and Parks—Contingencies	10 00
Robert McDonald	Refund on account of repatriation expenses of his wife Margaret McDonald—Relief of Distressed Canadians	5 00
Ernest Wilson	Refund by Jas. A. Stewart on account repatriation expenses in July, 1914—Relief of Distressed Canadians	53 84
Thos. Wilson	Refund by Robt. McDonald on account repatriation expenses of his wife—Relief of Distressed Canadians	5 00
A. R. Regan	Refund on account repatriation expenses of self and wife in December, 1914—Relief of Distressed Canadians	5 00
I. R. Polson	For two loads of straw at $3—Immigration Expenses	6 00
J. J. Dixson	Winnipeg cheque 10185 of 1914-15, not used—Immigration Expenses	50 00
Mrs. C. Telford	Winnipeg cheque 10184 of 1914-15, not used—Immigration Expenses	25 00
Mrs. F. Bockus	Winnipeg cheque 10186 of 1914-15, not used—Immigration Expenses	50 00
E. St. Germain	Winnipeg cheque 10187 of 1914-15, not used—Immigration Expenses	25 00
Alex. Henderson	Refund account advances for travelling expenses—from Yukon—Expenses of Government—Yukon Territory	25 00
Bate & Co	Refund on account of deportation expenses of Gertrude Waugh—Immigration Expenses	4 65
La Compagnie Générale Transatlantique	Ex-s.s. *La Touraine*, May 25, 1914—Immigration Expenses—Detention Hospitals—Quebec	13 70
Furness, Withy & Co	Ex-s.s. *Tabasco*, Feb. 20, 1915—Immigration Expenses—Detention Hospitals—Halifax	1 00
A. McLeod	Refund amount Cheque issued by C. R. Mills, July 4, 1912, and shown in J. W. McLeod's accounts for Forestry Branch. Cheque was issued in favour of A. Balzun, but never used—Dominion Lands and Parks—Protection of Timber	3 75
O. Card	Refund proceeds sale of skiff at Fort Smith formerly used by Forestry Branch—Dominion Lands and Parks—Protection of Timber	10 00
R. D. McDonald	Refund amount overpaid for one day's salary in May 1914—Dominion Lands and Parks—Protection of Timber	2 42
G. Fitzgibbons	Refund amount overpaid for salary in August 1915—Dominion Lands and Parks—Salaries	20 00
C. M. O'Neil	Refund on account advances for expenses from Irrigation—Dominion Lands and Parks—Surveys, 1914-15	30 00
J. H. Brownlee	Refund balance unexpended advances for expenses—Dominion Lands and Parks—Surveys 1914-15	9 25
K. H. Smith	Refund balance on hand advances from Water-power Investigation to March 31, 1915—Dominion Lands Parks—Water-power Investigations	34 16
J. E. McMullen	Refund proceeds sale of an old democrat—Dominion Lands and Parks—Contingencies	40 00
A. Norquay	Refund proceeds sale of old harness formerly used by Homestead Inspector Wynne—Dominion Lands and Parks—Contingencies	00

F.—STATEMENT of Casual Revenue for the Fiscal Year ended March 31, 1916.—*Con.*

Name.	Particulars.	Amount.
		$ cts.
Paul Reykdal	Proceeds of sale of horse—Dominion Lands and Parks—Contingencies	75 00
Homestead Inspector Blackwell	Proceeds of sale of old buggy—Dominion Lands and Parks—Contingencies	7 00
Inspector Lepine	Proceeds of sale of horse—Dominion Lands and Parks—Contingencies	85 00
Inspector Kembray	Proceeds of sale of old team and harness—Dominion Lands and Parks—Contingencies	115 00
Inspector Brandts	Proceeds of sale of team and buggy—Dominion Lands and Parks—Contingencies	75 50
Timber Inspector D. Fraser	Refund of proceeds sale of buggy—Dominion Lands and Parks—Contingencies	5 00
S. Maber	Refund balance deducted from account in 1912-13—Dominion Lands and Parks—Contingencies	1 05
J. W. Martin	Refund balance on hand advances in 1914-15, from Contingencies for purchase of an outfit for Homestead Inspector J. Fletcher—Dominion Lands and Parks Contingencies	348 00
J. W. McAbee	Refund salary cheque No. 3544 for June, not used—Dominion Lands and Parks—Protection of Timber	125 00
Thos. Wilson	Refund by Mrs. James Campbell on account of repatriation expenses—Relief of Distressed Canadians	6 00
Thos. Wilson	Refund by Robt. F. McDonald on account of repatriation expenses of his wife—Relief of Distressed Canadians	5 00
Can Pac. Railway Company	Refund *re* deportation of Ivan Peel—Immigration Expenses	15 00
A. R. Regan	Refund on account of repatriation expenses of self and wife in December 1914—Relief of Distressed Canadians	5 00
John McMurphy	Refund on account of over-charges in his accounts of 1914-15—Immigration Expenses	30 11
A. E. Skinner	Refund on account of over-charges in his expense accounts of 1914-15—Immigration Expenses	31 36
R. Spence	Account of expenses disallowed *re* stop-over at Chicago in Sept. 1914, in his way back from Cambrice, P.A., to Winnipeg *re* deport—Immigration Expenses	12 60
Canadian Pacific Railway Co	Refund account freight on car No. 41259—Immigration Expenses	5 27
C.P. Railway Co	Refund account freight on 1 box sample of grain—Immigration Expenses	1 00
C. Byrne	Refund account of over-payment on cheque 10126 of 1914-15—*Re* expenses—Immigration Expenses	0 30
J. H. Pedlar	Refund on account of expenses—Immigration Expenses	6 80
J. A. Banfield	Refund of overpayment on cheque 1218 of Aug. 11, 1914—Immigration Expenses	3 75
J. G. Hargrave	Refund of overpayment on cheque 275 of May, 20 1915—Immigration Expenses	6 90
T. J. Connell	Refund of overpayment in his February 1915 account—Immigration Expenses	1 00
D. L. McLean	Refund under power appropriation cheque No. 28, Nov. 24, 1913, not used—Dominion Lands and Parks—Water Power Investigations	151 66
Thos. Wilson	Refund by Mrs. James Campbell on account of repatriation expenses—Relief of Distressed Canadians	6 00
P. M. Buttler, Agent of Grand Trunk Pacific Railroad	Refund on account of Transportation of Mrs. E. Tasse Mrs. Sarah Schell—Immigration Expenses	28 44
Mrs. Annie O'Regan	Refund on account repatriation expenses of self and husband in December, 1914.—Relief of Distressed Canadians	5 00
R. N. W. M. Police	Refund amount collected for expenses connected with lunatic named Winfield S. Whitman. Expenditure was made as follows: $229.65 in March, and $10 in August, 1914. Expenses of Government—Yukon Territory	239 65
Dr. R. T. Rutherford	Refund amount paid by him to Rembrandt Co., for rent of house for month of July, 1915, same having already been paid—Immigration Expenses	63 25

F.—STATEMENT of Casual Revenue for the Fiscal Year ended March 31, 1916.—*Con.*

Name.	Particulars.	Amount.
		$ cts
A. E. Skinner	Refund on account of overcharges in expense account, 1914-15.—Immigration Expenses.	31 36
John McMurphy	On account of overcharges in expense account, 1914-15—Immigration Expenses	30 11
J. A. L'Ecuyer	Refund of telephone charge to Hayter Reed on May 27, 1914, paid twice—Immigration Expenses	0 25
E. M. Sankey	Refund of over-payment on account expenses in May, 1914—*Re* cheque No. 480—Immigration Expenses	1 00
F. E. Maunder	Refund balance unexpended advances for expenses Yoho Park in 1912-13—Dominion Lands and Parks—Parks	407 16
I. Quick	Refund amount collected from Mr. Quick who sold articles belonging to the Irrigation Branch in 1912 but failed to hand over the money till now—Dominion Lands and Parks—Irrigation	85 80
Receiver General	Immigration cheque No. 9361 of Nov. 30, 1915 to recoup Dominion Lands Contingencies Appropriation for amounts of $225 each advanced to Messrs. Nelson Spencer and D. J. Wiley on account of travelling expenses *re* seed grain matters. No detail of expenses to be furnished as per account No. 20|2563 of November 3, 1915—Dominion Lands and Parks—Contingencies	450 00
H. L. Bowyer	Refund amount deducted his account in 1914-1915—Dominion Lands and Parks—Contingencies	8 95
W. E. Talbot	D. L. A. Calgary refund Balance advances from Dominion Lands Contingencies in 1913-14 to late Homestead Inspector T. H. E. Magee—Dominion Lands and Parks—Contingencies	25 22
Homestead Inspector Barr	Refund proceeds sale of old buggy—Dominion Lands and Parks—Contingencies	12 60
Thos. Wilson	Refund by Mrs. Margaret McDonald on account of her repatriation expenses in January, 1915—Relief of Distressed Canadians	5 00
Mrs. Annie O'Regan	Refund on account of repatriation expenses of self and husband in December 1914—Relief of Distressed Canadians	6 00
Frank Chittick	Refund on account of expenses—Immigration Expenses	9 71
W. B. Oakley	Refund account expenses, *re* cheque No. 1153 of Aug. 4, 1914—Immigration Expenses	7 97
A. E. Skinner	Cheque No. 7735 Refund on account of overcharges in his expenses during 1914—Immigration Expenses	31 36
John McMurphy	Cheque No. 7738 refund on account of over-charges in his expenses during 1914—Immigration Expenses	30 11
John Hoolahan	Amount left with the Agent by various persons (deports) which are still unclaimed, as follows:—Jos. Stipanich, $4; Schwartz, 80 cents; Anton Hansen, $1.50—Immigration Expenses	6 30
R. Ripley, Homestead Inspector	Proceeds of sale of old horse—Dominion Lands and Parks—Contingencies	100 00
D. J. Rose, D. L. A., Prince Albert	Refund amount received from proceeds of sale of old cutter and harness used by Inspector D. L. Burgess—Dominion Lands and Parks—Contingencies	15 00
Alex. Norquay, A.D.L., Edmonton	Refund amount received proceeds sale of team, etc., formerly purchased through D. L. and Parks Contingencies—Dominion Lands and Parks—Contingencies	84 80
D. J. Rose, D.L.A., Prince Albert	Refund proceeds sale of horse used by Homestead Inspector D. L. Burgess—Dominion Lands and Parks—Contingencies	45 00
A. Burnett	Refund cheque No. 113 costs of litigation not used, to cover amount collected in *re* King vs. Quick for wornout articles formerly purchased by the Irrigation Branch—Dominion Lands and Parks—Irrigation	14 20
J. B. Walker	Refund by Mrs. Isabella K. Hendry on account of her repatriation expenses in November, 1914—Relief of Distressed Canadians	5 00

F.—STATEMENT of Casual Revenue for the Fiscal Year ended March 31, 1916.—*Con.*

Name.	Particulars.	Amount.
		$ cts.
W. Creery	Refund of over-payment on the following vouchers—No. 1102, Aug. 17, 1914, $1; No. 1548, Sept., 9, 1914, $1—Immigration Expenses	2 00
Desjardins Bros.	Refund double payment made to Desjardins Bros. (per The Funeral & Obituary Co.) *re* burial of Lauri Santela, cheque No. 3418 of January 21, 1915—Immigration Expenses	15 00
Province of Saskatchewan	Refund on account of expenses *re* Ivan Kypsner—Immigration Expenses	20 00
Beaver Lumber Co	Refund of overpayment *re* John Karnovin per Winnipeg, of May, 1914—Immigration Expenses	0 50
E. A. Skinner	On account of overcharges in his expenses of 1914–15—Immigration Expenses	31 36
John McMurphy	On account of overcharges in his expenses of 1914–15—Immigration Expenses	30 11
Thos. D. Beattie	Proceeds of sale of old furniture at Immigration Hall, Vegreville, Alberta—Immigration Expenses	17 75
C. H. Steckdale	Refund proceeds of sale of horse used by Homestead Inspector McLaren—Dominion Lands and Parks—Contingencies	50 00
Wilfrid Thibault	Sale of Densmore Typewriter to Wilfrid Thibault—Yukon Appropriation	10 00
J. B. Walker	Refund by Mrs. Isabella K. Hendry on account of repatriation expenses in fall of 1914—Relief of Distressed Canadians	5 00
Bank of Montreal, London, England	Cost of inspection emigrate children for 1913—Immigration Expenses	8,155 80
Dominion Lands Agent, Edmonton	Refund balance unexpended. Cheque No. 726—Dominion Lands and Parks—Contingencies	0 05
Thomas Wilson	Refund by Mrs. R. McDonald on account her repatriation expenses in January, 1915—Relief of Distressed Canadians	5 00
Mrs. Annie O'Regan	Refund on account repatriation expenses of self and husband in December, 1914—Relief of Distressed Canadians	5 00
Mrs. M. G. Gelley	Refund on account expenses, *re* Immigration Voucher No. 866 July, 1914—Immigration Expenses	0 40
Mrs. M. G. Gelley	Refund on account expenses, *re* Immigration Voucher, No. 1501 September, 1914.—Immigration Expenses	0 60
Charles Perry	Refund overpayment on account expenses, *re* immigration voucher No. 3966, March, 1915—Immigration Expenses	0 40
W. G. Simmons	Refund on account expenses in March and April, 1915 as per Winnipeg cheques No. 3974 for $1.25 and No. 10230 for $0.20—Immigration Expenses	1 45
C. W. Anderson	Expenses incurred by Department of Interior *re* deportation of Ivan Hines, John Alexis, and C. Yarwood, in February 1915—Immigration Expenses	45 00
Canadian Pacific Railway Co	Refund railway transportation of W. E. Dorsett from St. John to Winnipeg, April, 1913—Immigration Expenses	44 00
John Bilinski	Refund balance expenses incurred by Department *re* his return to Canada in December, 1914—Immigration Expenses	6 71
A. E. Skinner	Refund overcharges in account of 1914–15. Cheque No. 8608—Immigration Expenses	31 36
John McMurphy	Refund overcharges in account of 1914–15. Cheque No. 8611—Immigration Expenses	30 11
Superintendent Rocky Mt. Park, Banff	Refund proceeds sale of old rubber and brass—Dominion Lands and Parks—Parks	60 80
General Supply Co	Refund cost of boiler purchased through the Canadian National Parks Appropriation—Dominion Lands and Parks—Parks	170 00
A. W. Gray	Refund balance on hand advances for excess in 1914–15—Dominion Lands and Parks—Parks	222 85
Dominion Lands Agent, Prince Albert	Refund proceeds sale of cutter used by Homestead Inspector J. F. McKenzie—Dominion Lands and Parks—Contingencies	6 00

SESSIONAL PAPER No. 25

F.—STATEMENT of Casual Revenue for the Fiscal Year ended March 31, 1916.—*Con.*

Name.	Particulars.	Amount.
		$ cts.
T. C. Secord	Proceeds of sale of horse—Dominion Lands and Parks—Contingencies	35 00
Mgr. Robinson's Famous Shows	Being refund cost of Chas. Thomas, one of their members in August, 1914—Immigration Expenses	10 50
John Hoolahan	Being amount collected by Officer Sevigny from William Marrie, on account of Mr. Marrie's repatriation expenses in September, 1914—Immigration Expenses	2 00
Thos. Wilson	Being refund by Mrs. Margaret McDonald, on account of repatriation expenses in January, 1915—Relief of Distressed Canadians	4 00
H. D. Lyon	Refund on account of Immigration Expenses, 1914-15—Immigration Expenses	35 33
Bank of Montreal, London	Refund on account cost of inspection of British Immigration children, for 1914—Immigration Expenses	6,097 45
Bank of Montreal, London	Refund on account expenses J. H. Stanford, *re* trip to Canada during 1914-15—Immigration Expenses	7 79
C. M. O'Neil	Refund on account expenses 1914-15—Dominion Lands and Parks—Irrigation Surveys	10 00
A.D.L., Edmonton	Proceeds sale of team by Homestead Inspector Driscoll —Dominion Lands and Parks—Contingencies	148 20
Hudson Bay Co	Refund for three sleds sold by them, portion of survey outfit of 1913—Dominion Lands and Parks—Surveys	75 00
C. H. Beddoe	Refund unused portion of railway ticket, March 2, 1915, Ottawa to Winnipeg, and return—Civil Government Contingencies	28 00
Jno. Hoolahan	Refund on account of repatriation expenses of Rev. G. Gallon—Relief of Distressed Canadians	29 00
Waterton Lakes Park	Balance on hand March 31, 1915—Dominion Lands and Parks—Contingencies	2 29
A.D.L., Swift Current	Proceeds of sale of harness by Homestead Inspector A. J. McDonald—Dominion Lands and Parks—Contingencies	5 00
Comptroller, Yukon	Refund amount collected from W. S. Whitman, insane patient—Yukon Expenses of Government	200 00
A.D.L., Lethbridge	Proceeds sale of buggy, used by Homestead Inspector Robert Ripley—Dominion Lands and Parks—Contingencies	25 00
Rocky Mountains Park	Refund on account damages to barracks at Internment Camp—Dominion Lands and Parks—Parks	3 90
		$27,632 47
	Less Refunds	8 00
		$27,624 47
Mrs. Loutit	Fee for liquor permit issued to her	2 00
Alex. Loutit	Fee for liquor permit issued to him	4 00
Frank Heron	Fee for liquor permit issued to him	2 00
George Norn	Fee for liquor permit issued to him	2 00
Paul Bulyea	Fee for liquor permit issued to him	2 00
Hudson Bay Co	Fees for liquor permits issued to employees of said company	133 00
Francois Mandeville	Fee for liquor permit issued to him	5 00
Jos. Hoole	Fee for liquor permit issued to him	2 00
J. F. Cunningham	Fee for liquor permit issued to him	4 00
L. Roy	Fee for liquor permit issued to him	2 00
A. Mandeville	Fee for liquor permit issued to him	2 00
Northern Trading Co. Ltd	Fees for liquor permits issued to Employees of said company	43 00
L. L. Dickey	Fee for liquor permit issued to him	2 00
D. Flaherty	Fee for liquor permit issued to him	2 00
D. W. Leahy	Fee paid on liquor permit for 2 gallons whisky	2 00
H. L. Brown	Fee paid on liquor permit for 2 gallons whisky	2 00
Rev. Father J. C. Lefebvre	Fee paid on liquor permit for 5 gallons liquor	5 00
Dr. A. L. McDonald	Fee for permit No. 1205, for 2 gallons Scotch whisky	2 00
Hudson Bay Co	Timber dues	39 65
W. S. Oliver	Proceeds sale of effects	112 50
		$ 370 15
	Net total	$27,994 62

G.—STATEMENT showing Repayments on Account of Seed Grain Advances

	Seed Grain Advances.								
	1915.	1914.	1913.	1912.	1911.	1909.	1908.	1905.	1901.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
	2,324,063 29	1,401 87	1,133 25	9,887 70	5,038 22	246 10	4,734 83	25 45	107 85
Refunds	4,673 74	27 34	.....	7 64	27 85	.....	315 62	.....	.....
	2,319,389 55	1,374 53	1,133 25	9,880 06	5,010 37	246 10	4,419 21	25 45	107 85

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and Relief Mortgages for the Fiscal Year ending March 31, 1916.

—	Seed Grain Advances.				Territorial Account 1886-7-8.	Relief Mortgages 1876.	Relief Advances.	Total.
	1896.	1895.	1894.	1890.				
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
	35 32	349 69	714 06	62 15	127 35	210 05	177,391 32	2,525,528 50
Refunds	.....	3 15	.....	.....	.....	.....	94 75	5,150 09
	35·32	346 54	714 06	62 15	127 35	210 05	177,296 57	2,520,378 41

H.—STATEMENT of Fines under Immigration Act for the Fiscal Year ended March 31, 1916.

Month.	From whom Received.	Amount.
1915.		$ cts.
April	Commissioner of Immigration	20 00
"	Chas. J. Hollimds	80 00
June	H. Bose	265 20
July	W. T. Watson	200 00
"	T. D. Cowper	65 00
"	Jas. C. Mitchell	15 00
"	Jas. C. Mitchell	200 00
August	Chas. W. Sander	57 00
"	Chas. W. Sander	10 00
September	D. M. Brodie	20 00
October	W. Marley	10 00
"	D. H. Reynolds	50 00
"	T. D. Cowper	165 00
"	Alphonse Morin	70 50
"	Chas. J. Holland	10 00
"	Alex. Fraser	5 00
"	E. Wills	150 00
"	A. W. Bulloek	50 00
"	Jas. C. Mitchell	75 00
"	Sells Floto Circus	200 00
November	A. L. Jolliffe	400 00
"	Clerk of the Peace, Quebec	20 00
"	Deputy Attorney General, Alberta	2 00
"	A. L. Jolliffe	200 00
December	J. Farrer	40 00
"	Ewen J. Hollands	17 00
1916.		
January	J. G. Tweed	5 00
"	T. W. Cowper	5 00
"	Mrs. E. B. Dobie	30 00
"	Geo. B. Smith	11 40
"	A. Morin	100 00
"	City of Trail, B.C.	10 00
February	James Goundrey	50 00
"	H. L. Good	50 00
March	C. H. Maxwell	124 61
"	Wm. Dumble	100 00
April	T. D. Cowper	100 00
Total		2,982 71

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I.—STATEMENT of Chinese Immigration Revenue collected by Ports during the Fiscal Year 1915-16.

Port.	Number of Chinese Exempts.	Paying Head Tax.		Registration for Leave.		Other Revenue.	Total Revenue.
		Number of Chinese.	Amount.	Number.	Amount.		
			$ cts.		$ cts.	$ cts.	$ cts.
Victoria	29	5	2,500 00	3,245	3,245 00	50 00	5,795 00
Vancouver	40	5	2,500 00	812	812 00	500 00	3,812 00
Montreal		7	3,500 00	2	2 00	525 00	4,027 00
Ottawa		1	500 00			4,250 00	4,750 00
Halifax				4	4 00		4 00
St. John		1	500 00	1	1 00		501 00
North Sidney		1	500 00				500 00
All Ports	69	20	10,000 00	4,064	4,064 00	5,325 00	19,389 00

J.—STATEMENT of Receipts received on account of Sales of Land, which amounts have been credited to the Special Account of the following Railway Companies, for the Fiscal Year ended March 31, 1916.

Railway Company.	Date of Order-in Council.	Amount.	Total.
		$ cts.	$ cts.
Calgary and Edmonton	August 17, 1908	80,647 80	
Qu'Appelle, Long Lake and Saskatchewan Railway	May 8, 1907, July 10, 1907	220,332 85	
Lake Manitoba Railway and Canal Company	December 5, 1908	97,617 05	
Canadian Northern Railway System			398,597 70

K.—STATEMENT of Gross Cash Receipts on account of Dominion Lands Revenue for the Fiscal Year ended March 31, 1916.

Month.	Homestead Fees.	Pre-emption and Purchased Homestead Fees.	Improvements.	General Sales of Land.	Timber Dues.	Rental from Grazing Lands.	Export Tax On Gold Mining Fees, Hay, Coal Petroleum, etc.	Canadian National Parks.	Survey Fees.	Map Sales, Rentals, Office Fees, and Miscellaneous	Total.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1915											
April	16,430 00	1,420 00	7,157 67	46,303 97	32,889 33	9,824 62	31,801 05	3,512 84	370 40	6,857 01	156,566 89
May	15,510 00	1,730 00	8,069 65	50,437 11	30,963 68	9,585 88	28,759 90	3,471 59	160 10	831 34	149,519 32
June	18,650 00	1,910 00	7,980 27	56,705 59	32,239 86	12,301 01	64,720 04	3,108 37	672 40	2,033 74	200,321 28
July	20,320 00	3,160 00	10,433 72	41,331 13	29,735 51	6,888 12	34,631 23	5,769 56	431 14	1,088 35	153,788 76
August	15,490 00	3,700 00	10,305 07	37,288 01	34,922 95	5,974 16	33,487 89	5,546 23	80 15	1,181 51	147,975 97
September	12,870 00	2,670 00	11,571 98	44,094 63	14,534 14	6,938 37	46,431 13	4,309 06	319 90	912 04	144,651 25
October	14,380 00	2,970 00	9,903 82	70,028 74	29,089 50	7,202 61	66,127 53	2,033 04	240 83	958 37	202,934 44
November	15,760 00	2,580 00	13,595 04	149,081 32	43,723 07	11,437 05	32,813 34	2,016 87	726 86	804 64	272,538 19
December	14,110 00	2,350 00	13,359 45	205,132 79	39,837 15	16,458 53	36,601 88	2,274 39	2,075 17	1,695 66	333,895 02
1916.											
January	8,030 00	1,010 00	8,980 67	120,793 09	48,485 09	9,159 80	31,582 67	2,233 02	833 87	1,205 79	232,314 00
February	8,200 00	1,120 00	5,575 64	100,186 45	18,744 45	9,317 77	46,733 27	1,237 07	506 82	2,008 96	193,630 43
March	10,600 00	1,120 00	5,849 72	152,587 38	23,795 95	13,867 10	39,590 97	1,981 49	559 71	5,392 05	255,344 37
	170,350 00	25,740 00	112,782 70	1,073,97021	378,960 68	118,955 02	493,280 97	37,493 53	6,977 35	24,969 46	2,443,479 92

L.—STATEMENT of Gross Receipts (cash and scrip) on account of Dominion Lands Revenue for Fiscal Year ended March 31, 1916, as compared with previous year.

Particulars.	1915–16.	1914–15.	Increase.	Decrease.	Net Decrease.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Dominion Lands Agencies	1,364,566 99	1,066,269 30	298,297 69		
Crown Timber Agencies	367,397 85	299,132 17	68,265 68		
Hay, Mining, Coal, Grazing, etc.	483,135 12	1,563,444 95		1,080,309 83	
Yukon Territory	191,046 43	211,124 34		20,077 91	
Canadian National Parks	37,493 53	37,895 97		402 44	
Totals	2,443,639 92	3,177,866 73	366,563 37	1,100,790 18	734,226 81

No. 33.

SCHOOL LANDS BRANCH.

SALES.

In view of the financial conditions then prevailing throughout the country, it was not considered advisable to hold any general auction sales of school lands during the past fiscal year, and only a few parcels were therefore offered at auction in addition to those sold by private sale to boards of school trustees for school sites, and to railway companies for right of way and other purposes of the railway under the Acts in that behalf.

The total area sold during the past fiscal year was as follows: 1461·83 acres for $21,141.68, being an average of $14.46 per acre.

The total net area sold in each province from the beginning to the 31st December, 1915, after making the necessary adjustments on account of cancellations, changes in areas, etc., was as follows:—

Manitoba	636,716·60	acres for	$ 6,168,446 29
Saskatchewan	603,618 41	"	8,776,375 72
Alberta	501,732 06	"	6,438,642 34
Total	1,742,067 07	"	$21,383,464 35

GRAZING PERMITS.

Some 4,986 grazing permits were issued during the fiscal year, namely:—

Manitoba	155
Saskatchewan	3,333
Alberta	1,498

The total revenue from this source for the three provinces was $75,682.38.

COAL.

Two coal leases were issued during the year, and the revenue from this source was $9,398.67. The number of coal leases in force is 106.

HAY.

Only one hay lease was issued. The number of hay permits issued was 7,292. The revenue from hay was $10,359.17.

TIMBER.

Ninety-four timber permits were issued during the fiscal year, the revenue from this source being $4,561.16.

PETROLEUM AND GAS.

Twenty-one leases for this purpose were issued, and the revenue from this source was $1,955.21. The number of these leases in force at present is 1,152.

CULTIVATION PERMITS.

Forty-four permits were issued for the cultivation of such portions of school lands as had been broken by squatters or others and had not returned to their original condition of prairie.

The revenue from these permits amounted to $599.95.

Statements herewith lettered A, B, and C, respectively, show the revenue collected from the school lands in the three provinces, duly classified.

The total net revenue from each province during the fiscal year was as follows:—

Manitoba	$244,363 21
Saskatchewan	472,942 05
Alberta	212,284 31
Total	$929,589 57

Under the provisions of the several Orders in Council in that behalf, the net revenue collected from the school lands in each province during the fiscal year, less the principal moneys of sales, and less also the expenditure was paid over to the Government of each province. The amounts paid over being as follows:—

Manitoba—	
Total net revenue	$244,363 31
Less principal moneys of sales	171,241 64
Revenue other than principal moneys	73,121 57
Less expenditure	10,477 32
Amount paid to province	$ 62,644 25
Saskatchewan—	
Total net revenue	$472,942 05
Less principal moneys of sales	286,402 67
Revenue other than principal moneys	$186,539 38
Less expenditure	10,864 33
Amount paid to province	$175,675 05
Alberta—	
Total net revenue	$212,284 31
Less principal moneys of sales	110,182 73
Revenue other than principal moneys	$102,101 58
Less expenditure	11,029 13
Amount paid to province	$ 91,072 45

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In addition to the foregoing the following amounts were paid to the Provincial Governments of Manitoba, Saskatchewan, and Alberta as interest on the school lands fund for the fiscal year, namely:—

Manitoba	$113,360 74
Saskatchewan	97,371 30
Alberta	78,154 28

This makes the total amount paid to each province for the fiscal year, as follows:—

Manitoba	$176,004 99
Saskatchewan	273,046 35
Alberta	169,226 73

The total expenditure for the fiscal year on all accounts was as follows:—

Manitoba	$ 10,477 32
Saskatchewan	10,864 33
Alberta	11,029 13
Total	$ 32,370 78

Statements D, E, and F show the balance standing to the credit of each of the school lands funds on the 1st April, 1916, namely:—

Manitoba	$3,858,208 55
Saskatchewan	3,349,465 69
Alberta	2,630,778 53

The following is an approximate statement of the work of the branch during the fiscal year, namely:—

Letters sent out	29,058
Letters received	20,059
Leases prepared	25
Statements of accounts rendered	17,000
Receipts issued	3,498
Grazing permits issued	4,986
Cultivation permits issued	44
Assignments registered	362
Requisitions for patents	326
Requisitions for refunds	384

FRANK S. CHECKLEY,
Controller.

A.—Manitoba School Lands.—Statement of Revenue Collected from School Lands for the Fiscal Year from April 1, 1915, to March 31, 1916, both dates inclusive.

Month.	Sales.		Total.	Cultivation.	Grazing.	Timber.	Hay.	Registration Fees.	Total.
	Principal.	Interest.							
1915.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
April	1,715 33	1,008 75	2,724 08		120 31				2,844 39
May	16,765 56	4,788 08	21,553 64	14 00	82 90		2 50		21,653 04
June	15,606 27	10,385 73	25,992 00		47 85				26,039 85
July	4,532 79	2,198 84	6,731 63	15 00	38 21		5 00		6,789 84
August	4,471 93	2,642 39	7,114 32		56 80				7,171 12
September	2,829 95	900 84	3,730 79		19 20				3,749 99
October	10,301 95	2,953 85	13,255 80		8 00		1 50		13,265 30
November	46,643 69	14,024 04	60,667 73	20 00	43 60	2 20			60,733 53
December	37,665 47	13,563 91	51,229 38		11 42				51,240 80
1916.									
January	13,202 89	8,789 61	21,992 50	20 00	147 54				22,160 04
February	4,958 45	2,660 58	7,619 03		216 85				7,835 88
March	9,782 80	3,365 98	13,148 78	64 50	87 10				13,300 38
	168,477 08	67,282 60	235,759 68	133 50	879 78	2 20	9 00		236,784 16
Agencies	3,015 01	1,533 60	4,548 61		1,652 68	761 35	1,873 35		8,835 99
	171,492 09	68,816 20	240,308 29	133 50	2,532 46	763 55	1,882 35		245,620 15
Registration fees								170 50	170 50
	171,492 09	68,816 20	240,308 29	133 50	2,532 46	763 55	1,882 35	170 50	245,790 65
						14 00	479 50		493 50
Fees transferred to Dom. Lands	171,492 09	68,816 20	240,308 29	133 50	2,532 46	749 55	1,402 85	170 50	245,297 15
Refunds	250 45	327 65	578 10		89 47	118 57	147 80		933 94
	171,241 64	68,488 55	239,730 19	133 50	2,442 99	630 98	1,255 05	170 50	244,363 21

B.—Saskatchewan School Lands.—Statement of Revenue Collected from School Lands for Fiscal Year from April 1, 1915, to March 31, 1916, both dates inclusive.

Month.	Sales.		Total.	Cultivation.	Grazing.	Timber.	Hay.	Coal.	Registration Fees.	Total.
	Principal.	Interest.								
1915.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
April	3,516 47	1,951 42	5,467 89	16 90	2,727 37					8,212 16
May	11,807 51	4,292 85	16,100 36	45 50	2,562 69		2 50			18,711 05
June	53,136 97	29,545 66	82,682 63	12 30	1,448 44		1 00			84,144 37
July	13,567 00	8,016 09	21,583 09		1,021 65					22,604 74
August	999 52	398 80	1,398 32	68 50	736 32					2,203 14
September	843 59	237 64	1,081 23	16 00	543 23					1,640 46
October	20,442 33	9,201 60	29,643 93	26 00	528 02					30,197 95
November	62,424 81	24,184 43	86,609 24	55 00	921 05		4 60			87,589 89
December	51,298 57	25,440 67	76,739 24		602 03					77,341 27
1916.										
January	30,176 01	9,517 24	39,693 25	5 00	3,163 99		16 00			42,878 24
February	11,876 29	8,039 69	19,915 98	20 00	3,870 51					23,806 49
March	17,651 68	7,957 30	25,608 98	38 90	3,147 71		40 00	20 13		28,855 72
	277,740 75	128,783 39	406,524 14	304 10	21,273 01		64 10	20 13		428,185 48
Agencies	8,694 46	2,710 80	11,405 26	151 25	27,564 99	302 55	8,328 18	1,044 52		48,796 75
	286,435 21	131,494 19	417,929 40	455 35	48,838 00	302 55	8,392 28	1,064 65		476,982 23
Registration fees									261 50	261 50
	286,435 21	131,494 19	417,929 40	455 35	48,838 00	302 55	8,392 28	1,064 65	261 50	477,243 73
						6 00	2,160 50			2,166 50
Fees transferred to Dom. Lands	286,435 21	131,494 19	417,929 40	455 35	48,838 00	296 55	6,231 78	1,064 65	261 50	475,077 23
Refunds	32 54	201 99	234 53		1,725 25	53 10	122 30			2,135 18
	286,402 67	131,292 20	417,694 87	455 35	47,112 75	243 45	6,109 48	1,064 65	261 50	472,942 05

C.—Alberta School Lands.—Statement of Revenue Collected from School Lands for Fiscal Year from April 1, 1915, to March 31, 1916, both dates inclusive.

Month.	Sales.		Total.	Cultivation.	Grazing.	Timber.	Hay.	Coal.	Petroleum and Natural Gas.	Registration fees.	Total.
	Principal.	Interest.									
1915.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
April	4,599 10	3,845 99	8,445 09	3 25	1,169 04			943 94	1 45		10,562 77
May	6,833 16	3,174 79	10,007 95		897 21		160 00	688 00			11,753 16
June	10,153 12	4,336 99	14,490 11		695 15			82 946	175 50		16,190 22
July	15,384 83	6,425 68	21,810 51		581 75			98 00	1 50		22,491 76
August	3,415 19	1,268 29	4,683 48		351 80			90 94			5,126 22
September	2,807 31	705 63	3,512 94		381 90		13 50	644 60			4,552 94
October	14,357 98	7,544 22	21,902 20		346 66		50				22,249 36
November	22,059 94	11,008 52	33,068 46		433 16			132 15	21 00		33,654 77
December	12,424 02	5,528 62	17,952 64		387 79			906 51	120 00		19,366 94
1916.											
January	6,224 13	4,021 74	10,245 87		1,561 59			79 00	80 00		11,966 46
February	4,529 69	4,499 70	9,029 39		1,647 69	8 51		1,498 92			12,184 61
March	6,188 40	6,614 22	12,802 62	7 85	1,098 38	79 88	1 60	1,260 40	335 00		15,585 73
	108,976 87	58,974 39	167,951 26	11 10	9,552 22	88 39	175 60	7,761 92	734 45		185,684 94
Agencies	1,277 74	644 54	1,922 28		17,341 77	3,802 70	3,861 44	1,207 10	1,470 76		29,606 05
	110,254 61	59,618 93	169,873 54	11 10	26,893 99	3,891 09	4,037 04	8,379 02	2,205 21		215,290 99
Registration fees										309 50	309 50
	110,254 61	59,618 93	169,873 54	11 10	26,893 99	3,891 09	4,037 04	8,379 02	2,205 21	309 50	215,600 49
Fees transferred to Dom. Lands						3 50	1,006 00				1,009 50
	110,254 61	59,618 93	169,873 54	11 10	26,893 99	3,887 59	3,031 04	8,379 02	2,205 21	309 50	214,590 99
Refunds	71 88	935 19	1,007 07		767 35	200 86	36 40	45 00	250 00		2,306 68
	110,182 73	58,683 74	168,866 47	11 10	26,126 64	3,686 73	2,994 64	8,334 02	1,955 21	309 50	212,284 31

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D.—Manitoba School Lands.—Statement of Revenue and Expenditure on Account of Manitoba School Lands for Fiscal Year ended March 31, 1916.

Particulars.	Period.	Dr.	Cr.
		$ cts.	$ cts.
By Balance on April 1, 1915			3,686,966 91
" Sales	12 months ended Mar. 31, 1916		239,730 19
" Cultivation permits, Timber dues, hay permits, grazing rentals and petroleum	" " "		4,462 52
" Registration fees	" " "		170 50
" Interest on fund	" " "		113,360 74
To Cost of management at Ottawa	" " "	5,919 33	
" Salaries, printing, advertising and general expenses	" " "	4,557 99	
" Revenue and interest paid to Manitoba Government	" " "	62,644 25	
" Interest on fund paid to Manitoba Government	" " "	113,360 74	
" Balance on March 31, 1916	" " "	3,858,208 55	
		4,044,690 86	4,044,690 86

E.—Saskatchewan School Lands.—Statement of Revenue and Expenditure on account of Saskatchewan School Lands for Fiscal Year ended March 31, 1916.

Particulars.	Period.	Dr.	Cr.
		$ cts.	$ cts.
By Balance on April 1, 1915			3,063,063 02
" Sales	12 months ended Mar. 13, 1916		417,694 87
" Cultivation permits, timber dues, hay permits, grazing rentals and petroleum	" " "		54,985 68
" Registration fees	" " "		261 50
" Interest on fund	" " "		97,317 30
To Cost of management at Ottawa	" " "	5,919 34	
" Salaries, printing, advertising and general expenses	" " "	4,944 99	
" Revenue and interest paid to Saskatchewan Government	" " "	175,675 05	
" Interest on fund paid to Saskatchewan Government	" " "	97,371 30	
" Balance on March 31, 1916	" " "	3,349,465 69	
		3,633,376 37	3,633,376 37

F.—Alberta School Lands.—Statement of Revenue and Expenditure on account of Alberta School Lands for Fiscal Year ended March 31, 1916.

Particulars.	Period.	Dr.	Cr.
		$ cts.	$ cts.
By Balance on April 1, 1915			2,520,596 80
" Sales	12 months ended Mar. 31, 1916.		168,866 47
" Cultivation permits, timber dues, grazing rentals and petroleum, and hay permits	" " "		43,108 34
" Registration fees	" " "		309 50
" Interest on fund	" " "		78,154 28
To Cost of management at Ottawa	" " "	5,919 34	
" Salaries, printing, advertising and general expenses	" " "	5,109 79	
" Revenue and interest paid to Alberta Government	" " "	91,072 45	
" Interest on fund paid to Alberta Government	" " "	78,154 28	
" Balance on March 31, 1916	" " "	2,630,779 53	
		2,811,035 39	2,811,035 39

No. 34.

LAND PATENT BRANCH.

This is my report on the work performed in the Land Patents Branch of the Department of the Interior during the twelve months which ended on the 31st March, 1916, and the several statements in relation thereto, marked A to W, inclusive.

LETTERS PATENT.

The number of letters patent issued during the period mentioned was 18,989, covering an area of 3,089,636 acres, which may be classified as follows:—

Province.	Patents.	Acres.
Manitoba	996	160,016
Saskatchewan	10,253	1,686,502
Alberta	7,448	1,208,951
British Columbia	227	31,181
Yukon Territory	62	2,857
North West Territories	3	129
Total	18,989	3,089,636

These grants, which are given in detail in the statements marked A to G, inclusive, may be summarized as follows:—

Grants.	Patents.	Acres.
Homesteads	15,067	2,501,757
Sales	1,056	115,098
Pre-emption sales	1,429	226,448
Purchased homesteads	541	84,886
Railways	614	77,678
Free grants	122	5,024
Hudson's Bay Company	83	77,455
Northwest halfbreeds	9	1,179
Licenses of occupation	26	111
Quit claims	42	—
Total	18,989	3,089,636

There was a decrease of 5,271 patents and 906,377 acres, as compared with the preceding year.

There are recorded in the Land Patents Branch, 338,725 letters patent, aggregating 82,239,902 acres, which have been issued since 1873 to March 31, 1916. The accompanying statement marked "H" shows the number of patents issued each year during that period with the acreage patented during each of such years.

LANDS DISPOSED OF.

Nineteen thousand five hundred and seventy-four entries were granted during the year, aggregating an approximate area of 3,131,738·4 acres, made up as follows:—

			Acres.
Homestead entries—			
Manitoba	3,960		
Saskatchewan	6,247		
Alberta	6,410		
British Columbia	413		
		17,030	2,724,800
Pre-emption entries—			
Saskatchewan	1,662		
Alberta	578		
		2,240	358,400
Purchased homesteads—			
Saskatchewan	210		
Alberta	92		
		302	48,320
Halfbreed scrip locations—			
Alberta	2		
		2	218·4
		19,574	3,131,738·4

There was a decrease in the number of homestead entries granted, as compared with the previous year, of 7,058 entries.

By land agencies the 17,030 homestead entries were made up as follows:—

Manitoba—	
Brandon	86
Dauphin	1,636
Winnipeg	2,238
	3,960
Saskatchewan—	
Battleford	739
Estevan	23
Humboldt	546
Maple Creek	750
Moosejaw	708
Prince Albert	1,225
Regina	85
Saskatoon	439
Swift Current	762
Weyburn	309
Yorkton	661
	6,247
Alberta—	
Calgary	685
Edmonton	3,202
Fort McMurray	39
Grande Prairie	863
Grouard	27
Lethbridge	201
Medicine Hat	398
Peace River	569
Red Deer	429
	6,410
British Columbia—	
Kamloops	236
New Westminster	123
Revelstoke	54
	413

The 17,030 entrants for homesteads represented 38,653 persons, as compiled from the information obtained from each entrant. Of these entries, 4,453 were made by residents of the several provinces of the Dominion; 19 by Canadians who had returned from the United States; and 2,779 by persons who had obtained homestead entries but which had either been cancelled by default or at the request of the entrants in order, in most cases, to enter for other lands; 3,388 were made by persons from the British Isles; 2,416 by Americans; 1,745 by Austro-Hungarians; 719 by Russians; 309 by Norwegians; 342 by Swedes; 170 by Germans; 111 by Frenchmen; 103 by Belgians; and the remaining 476 homesteads were made by citizens of various other countries.

CANCELLED ENTRIES.

There were cncelled during the same period, 12,731 homestead entries (Manitoba 1,593, Saskatchewan 5,722, Alberta 5,149, and British Columbia 267), 2,088 pre-emption entries (Saskatchewan 1,313, Alberta 775), 81 purchased homestead entries (Saskatchewan 50, Alberta 31), and sales 38.

SALES.

Four hundred and fifty-three sales were made during the fiscal year for 13,472 acres of land, with an average for each sale 29·75 acres.

NEWLY SURVEYED LANDS THROWN OPEN TO HOMESTEAD ENTRY.

During the past fiscal year newly surveyed lands comprised in 381 townships were made available for homestead entry in the following land agencies:—

Manitoba	Dauphin	14
	Winnipeg	42
Saskatchewan	Battleford	1
	Prince Albert	10
	Swift Current	1
Alberta	Calgary	4
	Edmonton	64
	Grande Prairie	14
	Grouard	75
	Peace River Crossing	22
	Lethbridge	1
	Red Deer	3
British Columbia	Kamloops	76
	New Westminster	19
	Revelstoke	35
		381

ACCOUNTS AND REVENUE.

There are at present kept in the branch about 50,000 accounts in connection with purchased homesteads, pre-emptions, and ordinary sales, and some 250,000 accounts in connection with seed grain, fodder and other relief, being an increase of 205,000 accounts over the last fiscal year.

During the fiscal year $1,040,326, including $55,193.54 for interest on deferred payments, was received on account of the sales above mentioned, and $2,486,773.90 was received for seed grain and provision liens, including $48,554.95 on account of interest, being an increase on the total sum collected, as compared with last year of $2,825,497.50.

This large increase in the revenue was due to the fact that during the winter 1914-15 and the spring of the latter year advances were made to the settlers of the western provinces of provisions and fuel and of seed grain and fodder, which amounted to about thirteen million dollars, which had to be partially paid to the Government in the autumn of 1915.

REFUNDS.

In connection with the sales and moneys collected for the value of improvements on cancelled homesteads, there were 2,066 refunds made, amounting to $96,110.18. including 1,491 refunds amounting to $72,941.18 on account of improvements, and, in connection with seed grain accounts, 102 refunds, amounting to $5,532.71. The latter refunds were mostly made for duplicate and excess payments while the refunds made on account of sales were for overpayments.

The following is a summary showing, approximately, the work performed in the Land Patents Branch during the fiscal year ended March, 1915:—

Files dealt with	245,136
Letters sent, written in the branch	43,616
Letters sent, written in the Assistant Secretary's office	4,844
Notices sent patentees	29,605
Notices with statements of account sent to purchasers and Dominion Lands Agents	57,964
Patents issued	18,989
Land entries checked and posted	20,171
Entries cancelled and recorded	12,731
Receipts issued	2,738
Requisitions for refunds prepared	2,168
Payments amounting to about $3,527,099.90 checked and posted	
Assignments registered	200
Instruments appointing substitutes under the Volunteer Bounty Act 1908, registered	1
Applications to purchase land dealt with	600
Seed grain certificates issued	2,191
Seed grain discharges	319
Letters of Release	200
Certified copies of patents prepared	86
Preliminary plans sent to the different land agencies	381

A great number of plans and sketches were prepared as well as memoranda to Council and special reports, etc., of which no record was kept.

N. O. COTE,

Controller of Land Patents Branch and
Registrar of Dominion Lands Patents.

A.—Statement of Letters Patent covering Dominion Lands situate in Manitoba, Saskatchewan, Alberta, Northwest Territories, British Columbia and the Yukon Territory, issued from the Department of the Interior during the Fiscal Year ending March 31, 1916, as compared with the Fiscal Year ending March 31, 1915, and recorded in the Land Patents Branch.

No.	Nature of Grant.	From April 1, 1915, to March 31, 1916.		From April 1, 1914, to March 31, 1915.	
		Patents.	Acres.	Patents.	Acres.
1	Alberta Railway and Irrigation Co's sales	24	10,769	53	13,047
2	British Columbia homesteads	152	19,622	198	27,051
3	British Columbia homesteads, Peace River Block	15	2,406	.....	.....
4	British Columbia sales	50	8,120	98	2,974
5	Coal lands sales	2	600	3	963
6	Coal surface sales	1	6	2	22
7	Homesteads	14,896	2,478,783	20,705	3,516,815
8	Hudson's Bay Co	83	77,455	19	9,888
9	License of occupation	26	111	14	34
10	Manitoba University grants	1	20	.....	.....
11	Military bounty grants	1	160	5	801
12	Military homesteads	2	647	2	640
13	Mining lands sales	12	4,120	10	13,178
14	Mineral rights (4,577 acres)	19	.....	25	.....
15	Northwest half-breed grants	7	1,019	17	2,419
16	Northwest half-breed grants, Peace River Block	2	160	.....	.....
17	Parish sales	4	1,985	2	191
18	Pre-emption sales	1,429	226,448	812	128,970
19	Purchased homesteads	541	84,886	493	77,511
20	Quit claim, special grants (2,517 acres)	42	.....	91	.....
	Railways—				
21	Alberta Central Railway Co	1	1	3	19
22	Alberta and Great Waterways Railway Co	1	1	.....	.....
23	Calgary and Edmonton Railway Co	48	15,369	101	27,091
24	Canadian Northern Railway Co	160	21,146	79	40,127
25	Canadian Northwestern Railway Co	18	289	.....	.....
26	Canadian Northern Pacific Railway Co	1	135	.....	.....
27	Canadian Pacific Railway grants	144	1,719	68	697
28	Canadian Pacific Railway roadbed and station grounds	2	7	9	94
29	Edmonton, Dunvegan and British Columbia Railway Co	18	120	9	127
30	Grand Trunk Pacific Railway	29	770	1	1,439
31	Grand Trunk Pacific Branch Lines Co	22	165	28	339
32	Kootenay Central Railway Co	.....	.....	16	192
33	Manitoba Railway Co	.....	.....	1	6
34	Manitoba and Northwestern Railway Co	.....	.....	1	3
35	Qu'Appelle, Long Lake and Saskatchewan Railroad and Steamboat Co	170	37,956	153	35,056
36	Sales	541	33,251	718	43,631
37	School lands sales	343	53,689	316	43,082
38	Special grants	120	4,844	181	8,365
39	Yukon Territory homesteads	2	299	2	257
40	Yukon Territory sales (535 acres). Under rights	60	2,558	25	984
	Totals	18,989	3,089,636	24,260	3,996,013

B.—STATEMENT OF LETTERS PATENT covering Dominion Lands situate in the Province of Manitoba, issued from the Department of the Interior during the Fiscal Year ending March 31, 1916, as compared with the Fiscal Year ending March 31, 1915, and recorded in the Land Patents Branch.

No.	Nature of Grant.	From April 1, 1915, to March 31, 1916.		From April 1, 1914, to March 31, 1915.	
		Patents.	Acres.	Patents.	Acres.
1	Homesteads	692	108,977	1,199	188,384
2	Hudson's Bay Co	2	13,778	3	2,401
3	Manitoba University grants	1	20	.....	.....
4	Military homesteads	1	320	1	320
5	Mining lands sales (370 acres, Under rights)	12	4,120	.....	.....
6	Northwest half-breed grants	.....	.....	1	160
7	Parish sales	3	527	2	191
8	Pre-emption sales	4	625	2	321
9	Quit claim, special grants (25 acres)	1	.....	3	.....
	Railways—				
10	Canadian Northern Railway Co	105	1,483	13	212
11	Canadian Pacific Railway grants	1	1	1	12
12	Canadian Pacific Railway roadbed and station grounds	.....	.....	3	50
13	Manitoba Railway Co	.....	.....	1	6
14	Sales	24	1,857	61	3,398
15	School lands sales	143	28,175	53	8,030
16	Special grants	7	133	11	747
	Totals	996	160,016	1,354	204,232

C.—STATEMENT OF LETTERS PATENT covering Dominion Lands situate in the Province of Saskatchewan, issued from the Department of the Interior during the Fiscal Year ending March 31, 1916, as compared with the Fiscal Year ending March 31, 1915, and recorded in the Land Patents Branch.

No.	Nature of Grant.	From April 1, 1915, to March 31, 1916.		From April 1, 1914, to March 31, 1915.	
		Patents.	Acres.	Patents.	Acres.
1	Homesteads	8,124	1,346,128	11,763	1,987,576
2	Hudson's Bay Co	61	52,681	10	5,615
3	License of Occupation	12	50	11	23
4	Mineral rights (1,319 acres)	5	.....	1	.....
5	Northwest half-breed grants	1	161	7	1,153
6	Pre-emption sales	890	141,102	537	43,610
7	Purchased homesteads	359	56,202	358	56,098
8	Quit claim, special grants (2,134 acres)	32	.....	71	.....
	Railways—				
10	Calgary and Edmonton Railway Co	1	804	14	523
11	Canadian Northern Railway Co	50	19,601	47	39,658
12	Canadian Pacific Railway grants	80	853	10	65
13	Canadian Pacific Railway roadbed and station grounds	1	6	.....	.....
14	Grand Trunk Pacific Railway	1	6	1	1,439
15	Grand Trunk Pacific Branch Lines Co	20	104	10	66
16	Manitoba and Northwestern Railway Co	.....	.....	1	3
17	Qu'Appelle, Long Lake and Saskatchewan Railroad and Steamboat Co	170	37,956	153	35,056
18	Sales	282	16,801	356	22,208
19	School lands sales	106	12,249	120	10,659
20	Special grants	58	1,798	66	1,839
	Totals	10,253	1,686,502	13,536	2,205,591

D.—Statement of Letters Patent covering Dominion Lands situate in the Province of Alberta, issued from the Department of the Interior during the Fiscal Year ending March 31, 1916, as compared with the Fiscal Year ending March 31, 1915, and recorded in the Land Patents Branch.

No.	Nature of Grant.	From April 1, 1915, to March 31, 1916.		From April 1, 1914, to March 31, 1915.	
		Patents.	Acres.	Patents.	Acres.
1	Alberta Railway and Irrigation Co's sales	24	10,769	53	13,047
2	Coal lands sales	2	600	3	963
3	Coal surface sales	1	6	2	22
4	Homesteads	6,080	1,023,678	7,743	1,340,855
5	Hudson's Bay Co	18	10,880	6	1,872
6	License of occupation	14	61	3	11
7	Military bounty grants	1	160	5	801
8	Military homesteads	1	327	1	320
9	Mining lands sales			10	13,178
10	Mineral rights (3,258 acres)	14		24	
11	Northwest half-breed grants	6	858	9	1,10
12	Parish sales	1	1,458		
13	Pre-emption sales	535	84,721	273	85,039
14	Purchased homesteads	182	28,684	135	21,413
15	Quit claim, special grants (358 acres)	9		17	
	Railways—				
16	Alberta Central Railway Co	1	1	3	19
17	Alberta and Great Waterways Railway Co	1	1		
18	Calgary and Edmonton Railway Co	47	14,565	87	26,568
19	Canadian Northern Railway Co	5	62	19	257
20	Canadian Northwestern Railway Co	18	289		
21	Canadian Pacific Railway grants	63	865	50	566
22	Edmonton, Dunvegan and British Columbia Railway Co	18	120	9	127
23	Grand Trunk Pacific Railway	28	764		
24	Grand Trunk Pacific Branch Lines Co	2	61	18	273
25	Sales	234	14,580	301	18,025
26	School lands sales	94	13,265	143	24,393
27	Special grants	49	2,176	99	5,184
	Totals	7,448	1,208,951	9,013	1,554,039

E.—Statement of Letters Patent covering Dominion Lands situate in the Province of British Columbia, issued from the Department of the Interior during the Fiscal Year ending March 31, 1916, as compared with the Fiscal Year ending March 31, 1915, and recorded in the Land Patents Branch.

No.	Nature of Grant.	From April 1, 1915, to March 31, 1916.		From April 1, 1914, to March 31, 1915.	
		Patents.	Acres.	Patents.	Acres.
1	British Columbia homesteads	152	19,622	198	27,051
2	British Columbia homesteads, Peace River Block	15	2,406	.....	.....
3	British Columbia sales	50	8,120	98	2,974
4	Northwest half-breed grants, Peace River Block.	2	160	.....	.....
	Railways—				
5	Canadian Northern Pacific Railway Co	1	135	.....	.....
6	Canadian Pacific Railway grants	.....	.....	7	54
7	Canadian Pacific Railway roadbed and station grounds	1	1	6	44
8	Kootenay Central Railway Co	.....	.....	16	192
9	Special grants	6	737	5	595
	Totals	227	31,181	330	30,910

F.—Statement of Letters Patent covering Dominion Lands situate in the Yukon Territory, issued from the Department of the Interior during the Fiscal Year ending March 31, 1916, as compared with the Fiscal Year ending March 31, 1915, and recorded in the Land Patents Branch.

No.	Nature of Grant.	From April 1, 1915, to March 31, 1916.		From April 1, 1914, to March 31, 1915.	
		Patents.	Acres.	Patents.	Acres.
1	Yukon Territory homesteads	2	299	2	257
2	Yukon Territory sales	60	2,558	25	984
	Totals	62	2,857	27	1,241

G.—Statement of Letters Patent covering Dominion Lands situate in the Northwest Territories, issued from the Department of the Interior during the Fiscal Year ending March 31, 1916, as compared with the Fiscal Year ending March 31, 1915, and recorded in the Land Patents Branch.

No.	Nature of Grant.	From April 1, 1915, to March 31, 1916.		From April 1, 1914, to March 31, 1915.	
		Patents.	Acres.	Patents.	Acres.
1	Hudson's Bay Co	2	116	.....	.....
2	Sales	1	13	.....	.....
	Totals	3	129	.....	.....

H.—Statement showing the number of Letters Patent issued by the Department of the Interior for Dominion Lands since 1873, and the number of acres patented.

Period.	No. of patents issued.	Acreage.
1873, May to 31st December	420	67,200
1874, 1st January to 31st December	577	92,320
1875, 1st " 31st October	464	74,240
1876, year ended 31st October	318	50,880
1877, " "	2,437	478,840
1878, " "	2,357	462,880
1879, " "	2,663	426,080
1880, " "	1,084	173,440
1881, " "	1,885	400,862
1882, " "	2,197	506,785
1883, " "	4,341	831,341
1884, " "	3,896	909,604
1885, " "	3,533	898,464
1886, " "	4,570	942,055
1887, " "	4,599	1,071,364
1888, " "	3,275	647,644
1889, " "	3,282	661,636
1890, " "	3,273	626,019
1891, " "	2,449	411,073
1892, " "	2,955	549,257
1893, " "	2,936	502,601
1894, " "	2,553	420,238
1894, November and December	413	66,102
1895, year ended 31st December	2,118	348,964
1896, " "	2,665	531,861
1897, " "	2,972	499,859
1898, " "	3,037	646,671
1899, " "	3,904	714,748
1st January, 1900 to 30th June	1,970	310,501
1901, year ended 30th June	6,461	6,846,857
1902, " "	8,768	4,711,104
1903, " "	7,349	3,266,388
1904, " "	6,890	2,982,579
1905, " "	8,798	6,197,354
1906, " "	12,370	4,181,345
1st July, 1906 to 31st March, 1907	10,596	2,361,330
1908, year ended 31st March	18,690	6,138,977
1909, " "	22,431	4,215,723
1910, " "	22,854	3,660,250
1911, " "	21,754	3,710,288
1912, " "	19,354	3,155,388
1913, " "	24,965	4,209,388
1914, " "	31,053	5,192,141
1915, " "	24,260	3,996,013
1916, " "	18,989	3,089,636
	338,725	82,239,902

I.—STATEMENT showing the number of Letters Patent forwarded to the several Registrars of the Land Registration Districts of the Provinces of Alberta, Saskatchewan and the Yukon Territory.

Registration Districts.	Number of Patents sent to Registrars.	Registration Districts.	Number of Patents sent to Registrars.
Assiniboia	576	Swift Current	1,587
East Saskatchewan	906	Cannington	52
West Saskatchewan	934	North Alberta	3,545
Yorkton	374	South Alberta	2,609
Humboldt	653	Yukon	62
Saskatoon	1,450	Moosomin	36
Moosejaw	1,325	North West Territories	6
			14,115

J.—STATEMENT showing the number of Homestead Entries made during the Fiscal Year 1915-16, as compared with Fiscal Year, 1914-15.

Agency.	MANITOBA.		SASKATCHEWAN.		ALBERTA.		BRITISH COLUMBIA.	
	1915-16.	1914-15.	1915-16.	1914-15.	1915-16.	1914-15.	1915-16.	1914-15.
Battleford			739	1,244				
Brandon	86	48						
Calgary					685	989		
Dauphin	1,636	1,313						
Edmonton					3,202	5,629		
Estevan			23	50				
Fort Murray					39			
Grand Prairie					863	898		
Grouard					27			
Humboldt			546	768				
Kamloops							236	446
Lethbridge					201	257		
Maple Creek			750	992				
Medicine Hat					398	447		
Moose Jaw			708	1,183				
New Westminster							123	219
Peace River					566	1,061		
Prince Albert			1,225	1,567				
Regina			85	131				
Red Deer					429	795		
Revelstoke							54	137
Saskatoon			439	815				
Swift Current			762	732				
Weyburn			309	445				
Winnipeg	2,238	3,059						
Yorkton			661	863				
Total	3,960	4,420	6,247	8,790	6,410	10,076	413	802

Number of entries:—	
Fiscal year 1914-15	24,088
" 1915-16	17,030
Net decrease for fiscal year 1915-16	7,058

RECAPITULATION.

Month.	MANITOBA.		SASKATCHEWAN.		ALBERTA.		BRITISH COLUMBIA.	
	1915-16.	1914-15.	1915-16.	1914-15.	1915-16.	1914-15.	1915-16.	1914-15.
1915.								
April	420	434	475	1,166	705	1,381	46	83
May	365	318	511	875	625	1,193	47	52
June	425	384	756	1,262	630	1,275	54	99
July	413	397	742	1,178	824	1,241	53	66
August	265	322	658	757	599	831	27	91
September	421	362	422	436	412	800	30	133
October	434	644	484	885	479	813	39	52
November	345	540	692	624	514	675	22	55
December	298	292	568	571	501	572	43	46
1916.								
January	184	195	268	327	339	340	9	39
February	201	199	298	293	302	351	19	25
March	189	333	368	416	480	604	24	61
Total	3,960	4,420	6,247	8,790	6,410	10,076	413	802

K.—STATEMENT showing number of Homestead Entries granted in the Provinces of Manitoba, Saskatchewan, Alberta, and British Columbia for Fiscal Year 1915-16, as compared with Fiscal Year 1914-15.

Agency.	1915–1916.	1914–1915.	Increase.	Decrease.
Manitoba.				
Brandon	86	48	38	
Dauphin	1,636	1,313	323	
Winnipeg	2,238	3,059		821
Total	3,960	4,420	361	821
Saskatchewan.				
Battleford	739	1,244		505
Estevan	23	50		27
Humboldt	546	768		222
Maple Creek	750	992		242
Moose Jaw	708	1,183		475
Prince Albert	1,225	1,567		342
Regina	85	131		46
Saskatoon	439	815		376
Swift Current	762	732	30	
Weyburn	309	445		136
Yorkton	661	863		202
Total	6,247	8,790	30	2,573
Alberta.				
Calgary	685	989		304
Edmonton	3,202	5,629		2,427
Fort Murray	39		39	
Grand Prairie	863	898		35
Grouard	27		27	
Lethbridge	201	257		56
Medicine Hat	398	447		49
Peace River	566	1,061		495
Red Deer	429	795		366
Total	6,410	10,076	66	3,732
British Columbia.				
Kamloops	236	446		210
New Westminster	123	219		96
Revelstoke	54	137		83
Total	413	802		389

Grand total fiscal year 1914–1915	24,088
" " 1915–1916	17,030
Net decrease for fiscal year 1915–1916	7,058

1.—STATEMENT showing the number of Homestead Entries made during the Fiscal Years ended March 31, 1915 and 1916, and the Nationality of the Homesteaders, as reported by the several Agencies of the Department in Manitoba, Saskatchewan, Alberta and British Columbia.

Nationalities.	No. of entries 1915.	No. of entries 1916.
Canadians from Ontario	2,009	1,885
" Quebec	648	505
" Nova Scotia	196	137
" New Brunswick	117	82
" Prince Edward Island	60	54
" Manitoba	1,032	1,137
" Saskatchewan	383	280
" Alberta	434	310
" British Columbia	76	63
Persons who had previous entry	3,639	2,779
Newfoundlanders	15	14
Canadians returned from the United States	48	19
Americans	4,286	2,416
English	2,974	2,374
Scotch	800	700
Irish	363	314
French	251	111
Belgians	109	103
Swiss	83	37
Italians	108	100
Roumanians	38	40
Syrians	16	5
Germans	474	170
Austro-Hungarians	2,879	1,745
Hollanders	104	50
Danes (other than Icelanders)	149	100
Icelanders	70	74
Swedes	628	342
Norwegians	645	309
Russians (other than Mennonites and Doukhobors)	1,332	719
Jews	.....	6
Russian Jews	43	.....
Canadian Jews	2	.....
Greeks	20	3
Chinese	3	4
Japanese	7	2
Persians	2	.....
Australians	4	4
New Zealanders	3	2
Turks	8	4
Serbians	4	4
Bulgarians	5	4
Hindoos	5	4
S. Africans	3	4
Central Americans	.....	4
Montenegrins	2	1
Arabians	.....	2
Brazilians	1	1
Mexicans	.....	3
South Americans	.....	4
Spanish	7	.....
W. Africans	1	.....
Hawaians	1	.....
West Indies	1	.....
Maltese	1	.....
Total	24,088	17,030

Number of souls represented by above entries 56,218 in 1915.
" " " " 38,653 in 1916.

M.—STATEMENT showing the number of Homestead Entries made during the Fiscal Years ended March 31, 1915 and 1916, by persons coming from the various States and Territories of the American Union.

States.	1915. No. of entries.	1916. No. of entries.
Alabama	6	4
Alaska	1	.....
Arkansas	21	.....
California	46	18
Carolina, North	15	5
Carolina, South	2	1
Colorado	24	10
Columbia, District of	.....	.....
Connecticut	13	6
Dakota, North	751	583
Dakota, South	239	138
Delaware	.....	.....
Florida	.....	2
Georgia	2	3
Idaho	42	21
Illinois	221	122
Indiana	100	41
Indian Territory	.....	.....
Iowa	283	145
Kansas	133	56
Kentucky	35	19
Louisiana	7	2
Maine	22	17
Maryland	7	3
Massachusetts	44	47
Michigan	247	138
Minnesota	740	394
Mississippi	2	2
Missouri	141	53
Montana	70	40
Nebraska	145	68
Nevada	1	.....
New Nampshire	16	8
New Jersey	11	4
New Mexico	.....	3
New York	134	55
Ohio	99	52
Oklahoma	43	22
Oregon	74	19
Pennsylvania	87	58
Rhode Island	15	7
Tennessee	15	6
Texas	39	16
Utah	5	6
Vermont	10	12
Virginia	16	9
Virginia West	4	4
Washington	144	67
Wisconsin	253	146
Wyoming	9	3
Total	4,334	2,435

N.—STATEMENT showing the number of Homestead Entries made during the Fiscal Year 1915-16, the Nationality of the Homesteaders and the Provinces in which the Entries were made.

Nationalities.	Provinces.				Total.
	Manitoba.	Saskatchewan.	Alberta.	British Columbia.	
Canadians from Ontario	226	898	728	33	1,885
" Quebec	78	194	226	7	505
" Nova Scotia	7	51	71	8	137
" New Brunswick	9	32	39	2	82
" Prince Edward Island	2	17	35	.....	54
" Manitoba	862	197	71	7	1,137
" Saskatchewan	13	223	42	2	280
" Alberta	2	9	295	4	310
" British Columbia	.....	4	41	18	63
Persons who had previous entry	539	1,053	1,137	50	2,779
Newfoundlanders	1	7	6	.....	14
Canadians returned from the United States	5	6	7	1	19
Americans	199	992	1,170	55	2,416
English	541	812	900	121	2,374
Scotch	170	230	272	28	700
Irish	86	101	122	5	314
French	42	43	25	1	111
Belgians	38	34	27	4	103
Swiss	9	13	15	.....	37
Italians	6	15	58	21	100
Roumanians	2	30	8	.....	40
Syrians	2	2	1	.....	5
Germans	37	61	71	1	170
Austro-Hungarians	747	547	450	1	1,745
Hollanders	10	10	29	1	50
Danes (other than Icelanders)	17	29	52	2	100
Icelanders	65	6	2	1	74
Swedes	71	133	117	21	342
Norwegians	27	161	114	7	309
Russians	137	326	249	7	719
Turks	.....	2	2	.....	4
Serbians	.....	1	3	.....	4
Bulgarians	.....	2	2	.....	4
Chinese	1	1	1	1	4
Japanese	.....	.....	1	1	2
Persians	.....	.....	.....	.....	.....
Australians	.....	1	3	.....	4
New Zealanders	1	.....	.....	1	2
Hindoos	1	.....	1	2	4
South Africans	.....	2	2	.....	4
Central America	.....	.....	4	.....	4
Greeks	.....	1	2	.....	3
Montenegrins	.....	.....	1	.....	1
Jews	5	1	.....	.....	6
Arabians	.....	.....	2	.....	2
Brazilians	1	.....	.....	.....	1
Mexicans	.....	.....	3	.....	3
South Americans	1	.....	3	.....	4
Total	3,960	6,247	6,410	413	17,030

Number of souls represented by above entries 38,653.

O.—STATEMENT showing the number of Homestead Entries made in the Provinces of Manitoba, Saskatchewan, Alberta and British Columbia during the Fiscal Year 1915-16, by persons coming from the United States of America.

States.	Provinces.				Total.
	Manitoba.	Saskatchewan.	Alberta.	British Columbia	
Alabama			4		4
Alaska					
Arizona					
Arkansas					
California	1	5	8	4	18
Carolina, North		3	2		5
Carolina, South			1		1
Colorado		2	7	1	10
Columbia, District of					
Connecticut		2	4		6
Dakota, North	139	220	222	2	583
Dakota, South	29	53	54	2	138
Delaware					
Florida			2		2
Georgia		2	1		3
Idaho		3	17	1	21
Illinois		53	67	2	122
Indiana		21	20		41
Indian Territory					
Iowa		67	75	3	145
Kansas		19	36	1	56
Kentucky		7	12		19
Louisiana		1	1		2
Maine		7	10		17
Maryland		2	1		3
Massachusetts		18	29		47
Michigan		53	84	1	138
Minnesota	32	230	130	2	394
Mississippi			2		2
Missouri		11	40	2	53
Montana		9	30	1	40
Nebraska		34	30	4	68
Nevada					
New Hampshire		5	3		8
New Jersey		1	2	1	4
New Mexico			3		3
New York		25	29	1	55
Ohio		19	31	2	52
Oklahoma		6	16		22
Oregon		3	13	3	19
Pennsylvania	1	21	32	4	58
Rhode Island		4	3		7
Tennessee		1	5		6
Texas		1	14	1	16
Utah		1	5		6
Vermont		4	8		12
Virginia		2	5	2	9
Virginia, West		2	2		4
Washington	1	5	49	12	67
Wisconsin	1	75	66	4	146
Wyoming		1	2		3
Total	204	998	1,177	56	2,435

P.—STATEMENT showing the number of Homestead Entries reported in each year since 1874.

Departmental Year Ended—	Number of Entries.
Oct. 31, 1874	1,376
" 31, 1875	499
" 31, 1876	347
" 31, 1877	845
" 31, 1878	1,738
" 31, 1879	4,068
" 31, 1880	2,074
" 31, 1881	2,753
" 31, 1882	7,483
" 31, 1883	6,063
" 31, 1884	3,753
" 31, 1885	1,858
" 31, 1886	2,657
" 31, 1887	2,036
" 31, 1888	2,655
" 31, 1889	4,416
" 31, 1890	2,955
" 31, 1891	3,523
" 31, 1892	4,840
" 31, 1893	4,067
" 31, 1894	3,209
Dec. 31, 1895	2,394
" 31, 1896	1,857
" 31, 1897	2,384
" 31, 1898	4,848
" 31, 1899	6,689
June 30, 1900	7,426
" 30, 1901	8,167
" 30, 1902	14,673
" 30, 1903	31,383
" 30, 1904	26,073
" 30, 1905	30,819
" 30, 1906	41,869
Nine months ended March 31, 1907	21,647
Year ended March 31, 1908	30,424
" " 31, 1909	39,081
" " 31, 1910	41,568
" " 31, 1911	44,479
" " 31, 1912	39,151
" " 31, 1913	33,699
" " 31, 1914	31,829
" " 31, 1915	24,088
" " 31, 1916	17,030

O.—STATEMENT showing the number of pre-emptipn and purchased Homestead Entries granted in each Land Agency during the Fiscal Year 1915-16.

——	Pre-Emptions.	Purchased Homesteads.
Agency.		
Battleford	51	21
Brandon		
Calgary	232	23
Dauphin		
Edmonton	1	1
Estevan		
Grand Prairie		
Grouard		
Humboldt		
Kamloops		
Lethbridge	39	11
Maple Creek	546	46
Medicine Hat	245	38
Moose Jaw	358	38
New Westminster		
Peace River		
Prince Albert	1	2
Regina		
Red Deer	61	19
Revelstoke		
Saskatoon	121	54
Swift Current	488	40
Weyburn	97	9
Winnipeg		
Yorkton		
Total	2,240	302
Provinces.		
Manitoba		
Saskatchewan	1,662	210
Alberta	578	92
British Columbia		
Total	2,240	302

R.—STATEMENT showing the number of homestead, pre-emption and purchased Homestead Entries granted in each month during the Fiscal Year 1915-16.

	Homestead.	Pre-Emption.	Purchased Homestead.
1915.			
April	1,646	128	15
May	1,553	140	18
June	1,865	168	24
July	2,032	282	34
August	1,549	336	34
September	1,285	236	31
October	1,436	264	32
November	1,573	208	32
December	1,410	200	36
1916.			
January	800	88	12
February	820	91	21
March	1,061	99	13
	17,030	2,240	302

S.—STATEMENT showing the Half-breed Scrip Locations during the Fiscal Year 1915-16.

Alberta.	No.	Acres.
Peace River	2	218·4

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T.—Statement of Entries affecting Dominion Lands which were made at Head Office during the year ended March 31, 1916.

	No. of Grants.	Acres.
Special grants	146	4,962 00
Calgary and Edmonton Railway Company		16,325 70
Canadian Northern Railway Company		20,087 46
Canadian Pacific Railway Co. (main line)		348 60
Qu'Appelle, Long Lake and Saskatchewan Railroad and Steamboat Company		38,002 10
Area granted to the Grand Trunk Pacific Railway for right of way purposes		1,033 48
Area granted to the Edmonton, Dunvegan and British Columbia Railway for right of way purposes		246 81
Alberta and Great Waterways Railway right of way		68
Railway, right of way	293	3,497,014 00
Hudson's Bay Company Grants	76	64,077 00

U.—Comparative Statement of the Homestead Entries and sales made during the Fiscal Years ending 31st March, 1915, and 31st March, 1916, respectively.

	Fiscal Year ending March 31, 1915.		Fiscal Year ending March 31, 1916.	
	No. of entries.	Acres.	No. of entries.	Acres.
Homesteads	24,088	3,854,080	17,030	2,724,800
Sales	724	25,702	453	13,472

V.—Statement showing the number of assignments recorded in the Land Patents Branch during the Fiscal Year ended March 31, 1916.

Number of deeds registered	200
Fees received in connection therewith	$397 00

W.—Statement of Land Entries cancelled during the year ended March 31, 1916.

Year in which entry was made.	Manitoba.					Saskatchewan.											Alberta.											British Columbia.					Grand Total.
	Homesteads.		Pre-emptions.		Sales	Homesteads.		Pre-emptions		Purchased Homesteads.				Sales.			Homesteads.		Pre-emptions		Purchased Homesteads				Sales			Homesteads.		Sales.			
	Cause of Cancellation.					Cause of Cancellation.											Cause of Cancellation.											Cause of Cancellation					
	Abandonment.	Default.	Error, &c.	Default.	Total.	Abandonment.	Default.	Error, &c.	Abandonment.	Default.	Error, &c.	Abandonment.	Default.	Error, &c.	Abandonment.	Default.	Error, &c.	Total.	Abandonment.	Default.	Error, &c.	Abandonment.	Default.	Error, &c.	Abandonment.	Default.	Abandonment.	Default.	Total.	Abandonment.	Default.	Abandonment.	Default.	Total.	
1916						3		1	2		1	1						8	4	1	2								7						15
1915	211	68	6		285	368	97	12	47	10	7	4		1				546	584	92	8	12	3	4	6		1	710	23	5			28	1569
1914	372	219	4		595	908	513	1	199	128	2	12	1		1			1765	1085	598	4	76	81	1	8	1	3	1857	49	63			112	4329
1913	134	154	2		290	583	695	1	174	223	3	4						1683	401	527	2	53	108		2	2		1095	45	56	1		102	3170
1912	73	89	2		164	191	348	1	57	92	1	6	5	1				702	164	277	2	34	52		1	2	1	533	3	7			10	1409
1911	26	55			81	72	209	1	40	79	1		4	1	1			408	82	179		26	47		5	3	1	346	2	1			3	838
1910	27	33			66	39	128	2	37	118		3		2				329	29	98	3	38	115					283	1	2			3	675
1909	11	21			32	11	54		13	41		3						122	15	53		22	70		1			161		2			2	317
1908	6	20			26	12	28		9	29		1				1		80	6	26		3	30				4	69	2	2			4	179
1907	5	15			20	4	24	1										29	4	22							4	30	1				1	80
1906	3	9		1	13	4	17								1	2		24	2	17							9	28		1			1	66
1905	1	3			4	3	10										2	15	1	14							1	16				1	1	36
1904		4			4	1	2											3	1	4								5						12
1903	1	5			6	2	3											5	1	3								4						15
1902		3			3		1											1		2								2						6
1901	1	2			3		2											2		1								1						6
1899		2			2															1								1						3
1898		3			3															1								1						4
1895		2			2																													2
Totals	871	707	14	1	1593	2201	2131	20	578	720	15	35	10	5	3	3	2	5722	2379	1916	21	264	506	5	23	8	6	5149	126	139	1	1	267	12731

No. 35.

REPORT OF THE ORDNANCE AND ADMIRALTY LANDS BRANCH, DEPARTMENT OF THE INTERIOR.

The following report is on the work performed in connection with this branch of the department during the fiscal year ending March 31, 1916.

There were no public sales of Ordnance land held during the past year, but, with reference to land previously sold or occupied under lease with the option of purchase, eleven lots or parcels situated in the various localities hereunder mentioned and summarized in the annexed statement marked "A" have been fully redeemed and letters patent issued therefor.

1. *Fort Erie.*—In 1899 a survey was made of part of the Garrison reserve, formerly the right-of-way of the Buffalo, Brantford, and Lake Huron railway which had been abandoned by the company and reverted to the Crown. The owners of the adjoining land were permitted, upon satisfactory proof of title, to purchase the parcel or parcels of land fronting on their property; one parcel was claimed and paid for at the time but pending proof of title no patent was issued. Satisfactory proof of title was filed and registered here during the past year and letters patent issued for the parcel of land in question.

2. *Grand Falls, N.B.*—Two lots forming part of the Ordnance reserve in this locality which were disposed of at public sales held in 1908 and 1910, respectively, were paid for in full and letters patent issued therefor.

3. *Kingston.*—One lot being part of the subdivision of the property known as the "Herchmer Farm" was sold at public auction in 1912. The balance of the purchase price—$160—was paid during the year and letters patent issued.

4. *Ottawa.*—Ordnance lots in this locality are occupied under covenants contained in the original leases granted by the Imperial authorities, one of such covenants being that tenants may purchase the lot or lots occupied upon paying, in cash, the amount of consideration money placed thereon. Within the past year two whole lots and four part lots were redeemed and letters-patent issued. The total amount of consideration money received was $810.

5. *Port Maitland.*—The Ordnance property at this point, known as the "Naval Reserve," was sold, under the authority of an Order in Council, to the Erie and Lake Ontario Railway Company, which company subsequently amalgamated with the Toronto, Hamilton and Buffalo Railway Company, for railway purposes and industrial development. This reserve was wholly occupied by squatters many of whom made valuable improvements on their holdings; but before disposing of the land to the Company the company were obliged to purchase the squatter's interests in the land, together with all improvements, and file for registration in the department quit claim deeds from each of the squatters in occupation, and in addition to purchase the land from the Crown at a valuation. The purchase price paid to the Crown for the land in question amounted to $2,150 which was paid in cash and letters patent issued.

The following statements are hereto annexed:

"A."—Statement giving the number of lots and part lots sold or redeemed, the amount for which such lands were originally sold and the sums received within the year as instalments or balance of purchase money.

"B."—Statement giving the various localities where Ordnance lands are situated on account of which monies have been received during the past fiscal year.

"C."—Statement of the receipts for each month of the fiscal year classified as fees, rent or interest and principal.

"D."—Statement showing the amounts due and unpaid at the close of the fiscal year classified as rtnt or interest and principal.

The number of letters received, recorded and filed was 339; number written, copied, indexed, and mailed, 569. In addition there were 129 accounts prepared and rendered; 83 receipts issued; 32 assignments received, examined and registered; 9 draft letters patent prepared; and 75 reports on various subjects relative to Ordnance lands prepared and submitted.

The accounts open in the books of this branch with purchasers and tenants have been regularly posted, the books carefully kept and a monthly statement of all monies received regularly prepared and forwarded to the superintending accountant of the department.

I beg to supplement the foregoing report by a brief summary of the work performed in this branch in connection with the recording, copying, indexing, printing, and filing copies of all the Orders in Council passed during the year dealing with the numerous, varied, and essential matters concerning the administration of this department. There were 818 Orders in Council passed during the year; of these 141 were requisitioned for publication in *The Canada Gazette* and 24 in both the *Canada* and *British Columbia Gazettes*. Three additional bound volumes of Orders in Council covering the years 1908, 1909 and 1910 were completed and distributed among the various branches of the department for convenience of reference and a permanent office record.

JOS. P. DUNNE,

Superintendent of Ordnance and Admiralty Lands.

A.—STATEMENT giving the number of lots and part lots sold or redeemed, the amount for which such lots were originally disposed of and the sum received as instalment or balance of purchase money during the fiscal year ending March 31, 1916.

Locality.	Number of lots sold or redeemed.	Amount of consideration of purchase money.	Amt. received on account during fiscal year.	Remarks.
		$ cts.	$ cts.	
Fort Erie	1 lot	8 56		Purchase money Paid 1899.
Grand Falls	1 farm lot	51 00	20 40	Bal. purchase money.
Grand Falls	1 town lot	50 00	0 45	Bal. purchase money.
Kingston	1 lot	400 00	160 00	Bal. purchase money.
Ottawa	2 whole lots	370 00	370 00	Purchase money in full.
Ottawa	4 half lots	440 00	440 00	Purchase money in full.
Port Maitland	Pt. Ord. Res	2,150 00	2,150 00	Purchase money in full.
		3,469 56	3,140 85	

B.—STATEMENT naming the various localities where Ordnance Lands are situated on account of which moneys have been received during the fiscal year ending March 31, 1916.

Locality.	Total.
	$ cts.
Amherstburg	2 00
Carillon	4 20
Edmundston	1 00
Elmsley	9 70
Fort Cumberland	64 00
Fort Erie	1 00
Grand Falls	2 45
Grenville	4 00
Kingston	570 25
Montague	4 00
Oromocto	0 25
Ottawa	1,840 38
Owen Sound	37 00
Point Edward	270 00
Point Pelee	80 95
Port Maitland	2,150 00
Prescott	3 00
Quebec	830 00
Queenston	2 00
St. Joseph's Island	3 80
Sorel	29 00
South Crosby	2 00
	5,910 98
Fees added	87 00
	5,997 98
Less Refunds	10 33
	5,987 65

C.—STATEMENT showing receipts each month of the year classified as fees, rent or interest equivalent to rent and principal.

Month.	Fees.	Interest.	Principal.	Total.
	$ cts.	$ cts.	$ cts.	$ cts.
April	2 50	146 50		149 00
May	5 00	246 19	130 00	381 19
June	36 00	328 20	2,150 00	2,514 20
July	28 00	1,059 49	180 00	1,267 49
August	2 00	8 75		10 75
September	1 50	24 00		25 50
October	2 00	60 00		62 00
November		69 00		69 00
December	4 00	461 88	660 00	1,125 88
January		240 62		240 62
February	6 00	136 05		142 05
March		10 30		10 30
	87 00	2,790 98	3,120 00	5,997 98
Refunds				10 33
				5,987 65

D.—STATEMENT showing amounts due and unpaid on account of purchase money and rent or interest for the year ending March 31, 1916.

Locality.	Rent or Interest.	Principal.	Total.
	$ cts.	$ cts.	$ cts.
Beaver Harbour	2 00		2 00
Burlington Beach	520 00		520 00
Chambly	313 08	152 00	465 08
Dalhousie	20 70	23 00	43 70
Elmsley	0 50		0 50
Fort Erie	1 00		1 00
Grand Falls	231 90	506 55	738 45
Grenville	0 40		0 40
Marlborough	8 00		8 00
Nepean	69 00		69 00
Niagara	151 90	507 00	658 90
Ottawa	1,992 10		1,992 10
Owen Sound	97 00		97 00
Oxford	23 60		23 60
Point Pelee	2 00		2 00
Presqu'isle	3 00		3 00
St. Croix River	9 00		9 00
St. Joseph's Island	386 42		386 42
Sorel	47 68		47 68
Tay	28 00		28 00
Walford	502 60		502 60
	4,409 88	1,188 55	5,598 43

No. 36.

CORRESPONDENCE REGISTRATION BRANCH.

Statement "A" shows the number of letters and documents recorded during the year.

Statement "B" shows the growth of the work year by year for the past seventeen years.

There were 1,576 telegrams received and registered.

Letters written in French, German, Polish, Ruthenian, Hungarian, Russian, Dutch, Doukhobor, Norwegian, Swedish, Italian, Icelandic, Bohemian, Roumanian, Finnish, and translated into English, numbered 1,706.

There were upwards of a million and a half files distributed to the several branches, and at present there are 12,000 files being acted on or awaiting action throughout the department.

A total of 449,568 letters and documents was received and dealt with, and 337,176 were numbered and recorded.

Much additional work has come to this branch in connection with the registration of seed-grain liens during the year and necessitated the temporary assistance of a considerable number of clerks.

J. M. ROBERTS.

A.—STATEMENT showing the number of Letters and Documents recorded during the Fiscal Year ended 31st March, 1916.

1915.	Letters Recorded.	Daily Average.	Registered Letters.	
			Received.	Sent.
April	19,934	831	2,267	1,270
May	21,035	879	2,417	1,811
June	21,936	877	2,444	1,842
July	26,756	1029	2,405	1,985
August	26,122	1045	2,418	1,852
September	25,612	1024	2,154	2,297
October	30,280	1213	2,332	2,034
November	25,549	1022	2,614	1,709
December	12,889	516	2,412	1,946
1916.				
January	18,751	781	2,628	1,989
February	47,096	1884	2,669	2,244
March	61,216	2355	2,752	2,420
Total	337,624	.....	29,512	23,399

B.—STATEMENT showing the number of Letters and Documents recorded during each Fiscal Year from 1900 to 31st March, 1916.

Fiscal Year.	Letters Recorded.
1900	48,663
1901	67,860
1902	67,722
1903	87,851
1904	113,074
1905	135,908
1906	176,729
1907 (nine months)	150,462
1908	187,684
1909	260,142
1910	264,209
1911	279,186
1912	272,419
1913	255,105
1914	238,463
1915	221,624
1916	337,176

No. 37.

STATEMENT of the work done in the Correspondence, Comparing, and Mailing Branch during the Fiscal Year ended March 31, 1916.

From April 1, 1915 to March 31, 1916.	Letters sent.	Registered letters sent.	Telegrams sent.	Totals.
1915.				
April	29,204	1,270	231	30,705
May	32,075	1,811	193	34,079
June	29,376	1,842	200	31,418
July	29,950	1,985	268	32,203
August	23,730	1,852	163	25,745
September	33,975	2,297	133	36,405
October	45,025	2,034	136	47,195
November	27,900	1,709	143	29,752
December	28,980	1,946	303	31,229
1916.				
January	29,280	1,989	85	31,354
February	31,801	2,244	95	34,140
March	38,469	2,420	121	41,010
Total for fiscal year ending March 31, 1916	379,765	23,399	2,071	405,235

The out-going letters were copied in 151 one-thousand paged letter-books.

The number of pages of letter-books indexed was 150,210.

The daily average of letters sent out was 1,270.

The heaviest average was during the month of October, 1915, the daily average being 1,734. The lightest month was August, 1915, with an average of 990.

There were 1,850 documents compared.

The grand total of outgoing correspondence from this office during the fiscal year 1915-16 was 405,235, an increase of 17,500 over the fiscal year 1914-15.

There were 51 circulars sent out to the Dominion Lands agents and sub-agents.

CHAS. C. PELLETIER,
Clerk in Charge,
Correspondence, Comparing, and Mailing Branch.

No. 38.

STATEMENT of work performed in the Survey Records Branch, Department of the Interior, during the year ending March 31, 1916.

Files received and dealt with	22,529
Letters drafted	5,529
Plans, tracings etc., compiled and copied	207
Original township plans copied	72
Plans copied for timber berths, etc	1,180
Plans sent Agents, Registrars, etc	18,730
Plans sent in answer to special requests	6,481
Pages of field notes copied	676
Prints of plans received and stored	171,447
Original Plans received and recorded	1,439
Filed Notes received and recorded	501
Descriptions written for patents	0
Letters to Agents, Registrars, etc	1,231
Registered parcels mailed	1,730
Work performed for the Topographical Survey Branch—	
Books searched for	8,353
Books sent	6,036
Books returned	6,899
Plans searched for	2,631
Plans sent	1,958
Plans returned	678
Volumes searched for	135
Volumes sent	78
Volumes returned	78
Work performed for Patents Branch—	
Plans searched for	939
Plans sent	803
Plans returned	1,622
Books searched for	61
Books sent	58
Books returned	76
Work performed for other Branches—	
Plans searched for	921
Plans sent	855
Plans returned	386
Books searched for	208
Books sent	179
Books returned	205

C. J. STEERS.

PART II

IMMIGRATION

REPORT OF THE SUPERINTENDENT OF IMMIGRATION.

Herewith are the usual reports on immigration for the fiscal year ended March 31, 1916.

Summary for the Fiscal Year 1915-16.

Per ocean travel—			
Quebec		6,168	
St. John		1,439	
Halifax		757	
Victoria		497	
North Sydney		202	
Vancouver		124	
New York	2,289		
Boston	91		
Portland	38		
		2,418	11,600
From the United States			36,937
Total			48,537

Comparative Statement.—Immigration to Canada, via Ocean Ports, by months, for the Fiscal Year 1915-16, compared with that of the Fiscal Year 1914-15.

	1914–15.				1915–16.			
	Males.	Females.	Children.	Totals.	Males.	Females.	Children.	Totals.
April	15,754	4,865	3,067	23,686	543	617	317	1,477
May	13,846	5,828	4,080	23,754	559	908	509	1,976
June	6,566	4,819	3,046	14,431	311	674	454	1,439
July	3,148	3,337	2,345	8,830	285	486	281	1,052
August	1,482	1,982	1,264	4,728	317	584	302	1,203
September	664	1,448	844	2,956	208	435	351	994
October	410	981	568	1,959	229	544	263	1,036
November	304	811	527	1,642	137	346	182	665
December	196	437	253	886	97	195	96	388
January	84	177	101	362	80	166	81	327
February	187	301	104	592	130	210	63	403
March	364	444	376	1,184	193	322	125	640
Totals	43,005	25,430	16,575	85,010	3,089	5,487	3,024	11,600

COMPARATIVE STATEMENT.—Immigration from the United States to Canada, by months, for the Fiscal Year 1915-16, compared with that of the Fiscal Year, 1914-15.

	1914–15.				1915–16.			
	Males.	Females.	Children.	Totals.	Males.	Females.	Children.	Totals.
April	6,524	2,696	2,528	11,748	2,282	1,191	927	4,400
May	4,631	2,383	1,951	8,965	1,678	1,038	761	3,477
June	3,669	2,383	1,521	7,573	1,467	1,082	610	3,159
July	3,233	2,063	1,348	6,644	1,364	905	527	2,796
August	3,036	1,372	964	5,372	2,255	858	579	3,692
September	1,735	947	648	3,330	1,817	661	431	2,909
October	1,679	1,011	718	3,408	1,548	755	601	2,904
November	1,280	835	464	2,579	1,379	665	462	2,506
December	998	657	395	2,050	1,092	617	436	2,145
January	1,057	549	281	1,887	937	464	250	1,651
February	1,016	588	371	1,975	1,167	623	374	2,164
March	2,280	1,076	892	4,248	3,064	1,132	938	5,134
Totals	31,138	16,560	12,081	59,779	20,050	9,991	6,896	36,937

COMPARATIVE STATEMENT.—Total Immigration, to Canada, by months, for the Fiscal Year 1915-16, compared with that of the Fiscal Year, 1914-15.

	1914–15.				1915–16.			
	Males.	Females.	Children.	Totals.	Males.	Females.	Children.	Totals.
April	22,278	7,561	5,595	35,434	2,825	1,808	1,244	5,877
May	18,477	8,211	6,031	32,719	2,237	1,946	1,270	5,453
June	10,235	7,202	4,567	22,004	1,778	1,756	1,064	4,598
July	6,381	5,400	3,693	14,474	1,649	1,391	808	3,848
August	4,518	3,354	2,228	10,100	2,572	1,442	881	4,895
September	2,399	2,395	1,492	6,286	2,025	1,096	782	3,903
October	2,089	1,992	1,286	5,367	1,777	1,299	864	3,940
November	1,584	1,646	991	4,221	1,516	1,011	644	3,171
December	1,194	1,094	648	2,936	1,189	812	532	2,533
January	1,141	726	382	2,249	1,017	630	331	1,978
February	1,203	889	475	2,567	1,297	833	437	2,567
March	2,644	1,520	1,268	5,432	3,257	1,454	1,063	5,774
Totals	74,143	41,990	28,656	144,789	23,139	15,478	9,920	48,537

COMPARATIVE STATEMENT.—Total Immigration to Canada, by Ports, for the Fiscal Year, 1915-16, compared with that of the Fiscal Year, 1914-15.

	1914–15.				1915–16.			
	Males.	Females.	Children.	Totals.	Males.	Females.	Children.	Totals.
Quebec	20,582	17,425	11,424	49,431	1,319	3,048	1,801	6,168
Halifax	8,343	3,203	2,301	13,847	204	319	229	752
St. John	2,520	1,504	1,018	5,042	362	759	318	1,439
Vancouver	977	108	72	1,157	60	43	21	124
Victoria	589	382	75	1,046	191	254	52	497
North Sydney	331	71	45	447	104	42	56	202
United States ports (New York, Portland, Boston, Philadelphia and Baltimore)	9,663	2,737	1,640	14,040	849	1,022	547	2,418
From the United States	31,138	16,560	12,081	59,779	20,050	9,991	6,896	36,937
Totals	74,143	41,990	28,656	144,789	23,139	15,478	9,920	48,537

SEX, OCCUPATION AND DESTINATION of Total Immigrant Arrivals in Canada, for the Fiscal Year ended March 31, 1916.
(M.=Male; F.=Female; C.=Children; T.=Totals.)

	Sex.				Trade or Occupation.											
					Farmers and Farm Labourers.			General Labourers.			Mechanics.			Clerks, Traders, etc.		
	M.	F.	C.	T.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.
Via ocean ports	3,089	5,487	3,024	11,600	1,036	709	654	482	269	290	425	494	325	246	284	136
From the United States	20,050	9,991	6,896	36,937	7,556	2,089	2,438	3,325	783	693	6,079	1,317	945	828	323	136
Totals	23,139	15,478	9,920	48,537	8,592	2,798	3,092	3,807	1,052	983	6,504	1,811	1,270	1,074	607	272

SEX, OCCUPATION AND DESTINATION of Total Immigrant Arrivals in Canada, for the Fiscal Year ended March 31, 1916—*Con.*

(M.=Male; F.=Female; C.=Children. T.=Totals.)

	Trade or Occupation.—*Con.*							Destination.							
	Miners.			Female Servants.	Not Classified.			Maritime Provinces.	Quebec.	Ontario.	Manitoba.	Saskatchewan.	Alberta.	British Columbia.	Yukon Territory.
	M.	F.	C.		M.	F.	C.								
Via ocean ports	67	25	24	1,668	833	2,038	1,595	925	1,806	4,445	1,064	1,168	931	1,259	2
From the United States	242	27	39	1,838	2,020	3,614	2,645	5,056	6,468	10,298	2,423	4,833	6,284	1,572	3
Totals	309	52	63	3,506	2,853	5,652	4,240	5,981	8,274	14,743	3,487	6,001	7,215	2,831	5

COMPARATIVE STATEMENT.—Total Immigration to Canada, by Nationalities, for the Fiscal Year 1915-16, compared with that of the Fiscal Year 1914-15, showing increase or decrease of each Nationality.

	1914–15.	1915–16.	Increase.	Decrease.
English	30,807	5,857		24,950
Irish	3,525	818		2,707
Scotch	8,346	1,887		6,459
Welsh	598	102		496
Total British	43,276	8,664		34,612
African, South	23	11		12
Albanian	4			4
Argentinian	5			5
Australian	51	32		19
Austro-Hungarian—				
Austrian, N.E.S.	502	15		487
Bohemian	94			94
Bukowinian	72			72
Croatian	164			164
Dalmatian	24			24
Galician	36			36
Hungarian, N.E.S.	218			218
Magyar	176			176
Ruthenian	5,830			5,830
Slovak	34			34
Belgian	1,149	172		977
Bermudian	4			4
Brazilian		2	2	
Bulgarian	4,048	1		4,047
Chinese	1,258	88		1,170
Cuban	1	1		
Dutch	605	186		41
French	1,206	180		1,02
German				
German, N.E.S.	2,470	27		2,443
Bavarian	2			2
Greek	1,147	145		1,002
Hawaiian	18	1		17
Hebrew				
Hebrew, N.E.S.	266	18		248
" Austrian	160	1		159
" German	1			1
" Polish	6			6
" Russian	2,674	46		2,628
Hindoo	1		1	
Italian	6,228	388		5,840
Jamaican	29	9		20
Japanese	592	401		191
Macedonian	132			132
Maltese	19	4		15
Montenegrin	9			9
Negro	202	34		168
Newfoundland	338	255		83
New Zealand	21	18		3
Persian	7	3		4
Polish—				
Polish, N.E.S.	153	1		152
" Austrian	1,272			1,272
" German	7			7
" Russian	544	7		537
Portuguese	8			8
Roumanian	361	4		357
Russian—				
Russian, N.E.S.	5,201	40		5,161
Finnish	459	139		320
Scandinavian—				
Danish	326	167		159
Icelandic	145	15		130
Norwegian	788	232		556
Swedish	916	177		739

TOTAL IMMIGRATION, by Nationalities, etc.—*Concluded.*

	1914-15.	1915-16.	Increase.	Decrease.
Serbian	220	6	.....	214
Spanish	755	11	.....	744
Swiss	209	42	.....	167
Turkish—				
Turkish, N.E.S.	33	.....	.....	33
Armenian	36	.....	.....	36
Syrian	79	3	.....	76
U.S.A. Citizens, via ocean ports	41	15	.....	26
West Indian	356	38	.....	318
Total Continental, etc	41,734	2,936	.....	38,798
From the United States	59,779	36,937	.....	22,842
Total immigration	144,789	48,537	.....	96,252

ARRIVALS AT OCEAN PORTS.

For the fiscal year 1915-16, there arrived via Canadian and United States ocean ports, 57,915 passengers, of whom 9,195 travelled saloon, and 47,820 steerage. Of the saloon passengers, 7,921 were destined to Canada, and 1,274 to the United States. Of the steerage passengers, 44,634 were for Canada, and 3,186 for the United States.

Included in the steerage passengers for Canada were 21,046 returned Canadians and 11,988 tourists, leaving the immigration proper at 11,600 souls, which, together with the 36,937 settlers from the United States, brings the total immigration to 48,537, a decrease as compared with that of the preceding fiscal year of 96,252 persons.

The following further statistical information will be of interest: Table I deals with the total arrivals of saloon passengers; table II with the total arrivals of steerage passengers; table III with the monthly arrivals of immigrants for Canada; and tables IV and V give summaries of the information obtained from immigrants for Canada upon arrival.

TABLE I.—Nationality and Sex of Saloon Passengers arriving at Ocean Ports, for the Fiscal Year ended March 31, 1916.

	CANADA.				UNITED STATES.				CANADA AND UNITED STATES.			
	Males.	Females.	Children.	Totals.	Males.	Females.	Children.	Totals.	Males.	Females.	Children.	Totals.
Australian					8	6	2	16	8	6	2	16
Belgian	1	1		2					1	1		2
Bermudian	10	8		18					10	8		18
Cuban	5	1	1	7					5	1	1	7
Dutch	10	4		14	1	2		3	11	6		17
French	9	7		16	4	3	3	10	13	10	3	26
German		1		1		2		2		3		3
Great Britain and Ireland—												
English	136	93	28	257	55	21	2	78	191	114	30	335
Irish	11	4		15	10	3		13	21	7		28
Scotch	26	22	6	54	18	2		20	44	24	6	74
Welsh	1			1					1			1
Greek	2			2					2			2
Hebrew, Russian	2			2					2			2
Italian	5	3		8					5	3		8
Jamaican	16	18	2	36					16	18	2	36
Japanese	5	2		7	1	1		2	6	3		9
Negro	12	19	3	34					12	19	3	34
Newfoundland	20	40	18	78	192	167	43	402	212	207	61	480
New Zealand		1		1	3	3		6	3	4		7
Polish, Russian					2			2	2			2
Portuguese						1		1		1		1
Russian	3	3	2	8	14	1		15	17	4	2	23
Scandinavian—												
Danish	1	1		2	2			2	3	1		4
Norwegian	1	2	2	5	1	1		2	2	3	2	7
Swedish	2	2		4	5	1	2	8	7	3	2	12
Spanish	6	3		9					6	3		9
Swiss	2	3		5					2	3		5
Syrian					4			4	4			4
U.S.A. Citizens	12	10		22	421	198	39	658	433	208	39	680
West Indian	30	18		48					30	18		48
Returned Canadian	2,320	1,315	345	3,980					2,320	1,315	345	3,980
Tourist	1,850	1,128	307	3,285	21	8	1	30	1,871	1,136	308	3,315
Totals	4,498	2,709	714	7,921	762	420	92	1,274	5,260	3,129	806	9,195

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TABLE II.—Nationality and Sex of Steerage Passengers arriving at Ocean Ports, for the Fiscal Year ended March 31, 1916.

	Canada.				United States.				Canada and United States.			
	Males.	Females.	Children.	Totals.	Males.	Females.	Children.	Totals.	Males.	Females.	Children.	Totals.
African, South	1	4	6	11	1			1	2	4	6	12
Australian	9	14	9	32	65	27	20	112	74	41	29	144
Austrian	4	8	3	15		1	1	2	4	9	4	17
Belgian	57	68	47	172	2	1		3	59	69	47	175
Brazilian	2			2					2			2
Bulgarian	1			1					1			1
Chinese	42	18	28	88					42	18	28	88
Cuban	1			1					1			1
Dutch	62	51	73	186	4	2		6	66	53	73	192
French	60	92	28	180	6	4	1	11	66	96	29	191
German	5	13	9	27		1		1	5	14	9	28
Great Britain and Ireland—												
English	1,329	2,820	1,708	5,857	234	225	127	586	1,563	3,045	1,835	6,443
Irish	217	445	156	818	71	44	20	135	288	489	176	953
Scotch	383	1,014	490	1,887	84	129	83	296	467	1,143	573	2,183
Welsh	27	52	23	102	1	2		3	28	54	23	105
Greek	85	35	25	145	1			1	86	35	25	146
Hawaiian	1			1	1			1	2			2
Hebrew—												
Hebrew, N.E.S.	10	7	1	18	3	1	1	5	13	8	2	23
" Austrian	1			1					1			1
" Russian	19	11	16	46	5	4	3	12	24	15	19	58
Hindoo	1			1					1			1
Italian	103	163	122	388	3			3	106	163	122	391
Jamaican	1	6	2	9					1	6	2	9
Japanese	148	233	20	401	2	4		6	150	237	20	407
Maltese	4			4					4			4
Negro	16	15	3	34					16	15	3	34
Newfoundland	111	85	59	255	628	427	137	1,192	739	512	196	1,447
New Zealand	6	8	4	18	29	13	8	50	35	21	12	68
Persian		2	1	3						2	1	3
Polish—												
Polish, N.E.S.		1		1						1		1
" Russian	4	3		7	1			1	5	3		8
Portuguese					2	1	2	5	2	1	2	5
Roumanian	2	1	1	4					2	1	1	4
Russian—												
Russian, N.E.S.	14	14	12	40	25	18	18	61	39	32	30	101
Finnish	62	40	37	139	12	11	9	32	74	51	46	171
Scandinavian—												
Danish	97	45	25	167	17	5	6	28	114	50	31	195
Icelandic	8	3	4	15					8	3	4	15
Norwegian	86	105	41	232	43	5		48	129	110	41	280
Swedish	49	71	57	177	23	5		34	72	76	63	211
Serbian	5	1		6					5	1		6
Spanish	10	1		11					10	1		11
Swiss	22	15	5	42	3	1		4	25	16	5	46
Turkish—												
Armenian					1			1	1			1
Syrian	3			3	3			3	6			6
U.S.A. Citizens	9	5	1	15	305	113	72	490	314	118	73	505
West Indian	12	18	8	38	6			6	18	18	8	44
Total immigration	3,089	5,487	3,024	11,600	1,581	1,044	514	3,139	4,670	6,531	3,538	14,739
Returned Canadian	14,872	3,974	2,200	21,046					14,872	3,974	2,200	21,046
Tourist	10,464	1,085	439	11,988	40	3	4	47	10,504	1,088	443	12,035
Totals	28,425	10,546	5,663	44,634	1,621	1,047	518	3,186	30,046	11,593	6,181	47,820

TABLE III.—Monthly arrivals of Immigrants for Canada, by Nationalities, at Ocean Ports, for the Fiscal Year ended March 31, 1916.

—	April	May	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Totals
African, South	1	3	5	1		1							11
Australian	1	2	1	2	1	8	1		6	4		6	32
Austrian	1	9	3			1						1	15
Belgian	21	45	8	13	20	5	8	13	32	2	1	4	172
Brazilian				1	1								2
Bulgarian		1											1
Chinese	2	3	11	11	11	2	19	5	8	4	5	7	88
Cuban						1							1
Dutch	87	24	6	18	6	7		12	5	10	3	8	186
French	17	31	7	13	12	27	13	20	16	4	6	14	180
German	2	1		2		2		11	1		3	5	27
Great Britain and Ireland—													
English	851	1,067	702	605	595	490	561	296	168	169	145	208	5,857
Irish	91	158	97	71	104	93	64	76	7	15	17	25	818
Scotch	172	326	378	134	194	188	159	118	49	27	62	80	1,887
Welsh	12	20	6	18	20	5	4	3	2	5		7	102
Greek	6	22	2	19	15	15	16	17	2	9	4	18	145
Hawaiian							1						1
Hebrew													
Hebrew, N.E.S	2	3	1		3	6	1			2			18
" Austrian				1									1
" Russian	2	7	11	4		1	2	1	4			14	46
Hindoo		1											1
Italian	49	67	29	26	14	16	32	26	19	16	37	57	388
Jamaican		3	6								1	2	9
Japanese	47	55	56	37	30	20	56	14	20	13	25	28	401
Maltese					1						1	2	4
Negro	4	7	2	4	4	5	2	3	1		2		34
Newfoundland	4	19	20	17	51	41	29	2	4	18	17	33	255
New Zealand	6	1	9			2							18
Persian										3			3
Polish—													
Polish, N.E.S			1										1
" Russian		2				2					3		7
Roumanian		1			2			1					4
Russian													
Russian, N.E.S	12		5	4	8	2	3	2	1	2		1	40
Finnish	14	9	7	5	16	3	8	6	15	3	42	11	139
Scandinavian													
Danish	5	25	16	20	22	4	23	12	6	1	8	25	167
Icelandic		5			8				1	1			15
Norwegian	47	22	23	3	34	8	13	17	5	2	12	46	232
Swedish	11	16	13	16	22	34	7	4	3	15	6	30	177
Serbian					3					1		2	6
Spanish	1		1		3				2		1	3	11
Swiss	7	11	5	5		1	3	3	6		1		42
Syrian		1						1			1		3
U.S.A. Citizens			1	2		2	1	2	2	1		4	15
West Indian	2	9	7		3	2	10		3		1	1	38
Totals	1,477	1,976	1,439	1,052	1,203	994	1,036	665	388	327	403	640	11,600

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TABLE IV.—Monthly arrivals of Immigrants for Canada, by Occupation and Destination, at Ocean Ports, for the Fiscal Year ended March 31, 1916.

——	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Totals
Agriculturists....	563	443	287	190	195	222	131	73	53	33	70	139	2,399
General labourers	93	224	129	85	96	64	94	65	38	27	53	73	1,041
Mechanics.....	120	268	149	134	141	58	66	80	58	51	45	74	1,244
Clerks, traders, etc.....	62	140	76	69	81	37	53	33	19	32	25	39	666
Miners.....	9	11	10	14	28	14	8	6	2	1	8	5	116
Female servants.	209	307	222	157	129	141	139	110	50	40	78	86	1,668
Not classified....	421	583	566	403	533	458	545	298	168	143	124	224	4,466
Totals.....	1,477	1,976	1,439	1,052	1,203	994	1,036	665	388	327	403	640	11,600
Maritime Provinces.....	227	90	161	53	88	108	40	29	24	36	20	49	925
Quebec.....	135	317	235	181	197	137	229	143	68	38	46	80	1,806
Ontario.....	517	795	522	419	429	486	391	266	114	134	166	206	4,445
Manitoba.....	141	221	149	85	140	65	69	54	31	21	37	51	1,064
Saskatchewan....	212	178	127	102	105	66	72	57	57	31	46	115	1,168
Alberta.....	98	162	99	110	126	36	88	49	43	19	29	72	931
British Columbia.....	147	213	146	100	118	96	147	67	51	48	59	67	1,259
Yukon Territory.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	2
Totals.....	1,477	1,976	1,439	1,052	1,203	994	1,036	665	388	327	403	640	11,600

TABLE V.—Nationality, Sex, Occupation and Destination of Immigrant arrivals for Canada, at Ocean Ports, for the Fiscal Year ended March 31, 1916.

(M.=Male; F.=Female; C.=Children.)

—	Sex.				Trade or Occupation.								
					Farmers and Farm Labourers.			General Labourers.			Mechanics.		
	M.	F.	C.	Totals.	M.	F.	C.	M.	F.	C.	M.	F.	C.
African, South	1	4	6	11									
Australian	9	14	9	32							2		
Austrian	4	8	3	15	1	2						1	
Belgian	57	68	47	172	17	15	21	8	2	1	8	5	
Brazilian	2			2									
Bulgarian	1			1				1					
Chinese	42	18	28	88				4					
Cuban	1			1									
Dutch	62	51	73	186	37	15	46	3			8	2	1
French	60	92	28	180	12	10	7	3	1		7	11	3
German	5	13	9	27	1								
Great Britain and Ireland—													
English	1,329	2,820	1,708	5,857	478	456	397	98	124	131	175	303	211
Irish	217	445	156	818	90	32	25	24	27	32	28	28	24
Scotch	383	1,014	490	1,887	138	90	79	39	56	76	81	107	71
Welsh	27	52	23	102	7	6	6	2			5	7	2
Greek	85	35	25	145	8	1	5	68	7	8	4		
Hawaiian	1			1				1					
Hebrew—													
Hebrew, N.E.S.	10	7	1	18				1	1	1	1	2	
" Austrian	1			1									
" Russian	19	11	16	46	4	1	2	2	1	3	7	4	2
Hindoo	1			1									
Italian	103	163	122	388	17	3	2	47	25	18	16	3	1
Jamaican	1	6	2	9								1	2
Japanese	148	233	20	401	48	10		39	8		9	1	
Maltese	4			4				2			1		
Negro	16	15	3	34				3			5	1	
Newfoundland	111	85	59	255				46	2	1	14	4	1
New Zealand	6	8	4	18	6	3	2						
Persian		2	1	3									

Polish—													
Polish, N.E.S.		1		1									
" Russian	4	3		7	2	1					1		
Roumanian	2	1	1	4									
Russian—													
Russian, N.E.S.	14	14	12	40	3	2	4	1	1	2	2	4	1
Finnish	62	40	37	139	17	4	3	35	10	11	5	1	4
Scandinavian—													
Danish	97	45	25	167	56	12	14	16			17	2	2
Icelandic	8	3	4	15	1			4			1		
Norwegian	86	105	41	232	57	36	28	10	2		9	2	
Swedish	49	71	57	177	22	8	7	16	2	6	10	2	
Serbian	5	1		6				3					
Spanish	10	1		11				4			2	1	
Swiss	22	15	5	42	8	2	5	2			3	1	
Syrian	3			3	1						1		
U.S.A. Citizens	9	5	1	15	4		1				2	1	
West Indian	12	18	8	38	1						1		
Totals	3,089	5,487	3,024	11,600	1,036	709	654	482	269	290	425	494	325

TABLE V.—Nationality, Sex, Occupation and Destination of Immigrant arrivals for Canada, at Ocean Ports, for the Fiscal Year ended March 31, 1916—*Con.*

(M. = Male; F. = Female; C. = Children.)

—	Trade or Occupation.									Destination.							
	Clerks, Traders, etc.			Miners.			Female Servants.	Not Classified.			Maritime Provinces.	Quebec.	Ontario.	Manitoba.	Saskatchewan	Alberta.	British Columbia.	Yukon Territory.
	M.	F.	C.	M.	F.	C.		M.	F.	C.								
African, South		1						1	3	6		1		2	5		3	
Australian	1	1					2	6	11	9	1	1	3	1		4	22	
Austrian	1	1	1				2	2	2	2		10	1	1			3	
Belgian	1	2		1	1	1	9	22	34	24	7	67	33	22	30	9	4	
Brazilian	1							1			1	1						
Bulgarian													1					
Chinese	28	16	27					10	2	1	2	17	10	1	3	3	52	
Cuban								1					1					
Dutch	2	2					8	12	24	26	81	12	36	36	7	14		
French	7	2		1		1	10	30	58	17	6	107	18	18	15	5	10	1
German	1	1					1	3	11	9	3	4	10	1	8	1		
Great Britain and Ireland—																		
English	95	134	52	12	11	9	824	471	968	908	324	761	2,695	489	687	465	435	1
Irish	14	33	10	6	2	1	204	55	119	64	71	154	320	118	55	45	55	
Scotch	29	69	40	11	6	7	385	85	301	217	117	367	724	222	159	143	155	
Welsh	1	2	2	2			17	10	20	13	7	18	38	16	7	5	11	
Greek	2	2					13	3	12	12	1	34	95	12			3	
Hawaiian																	1	
Hebrew—																		
Hebrew, N.E.S	6	1						2	3			8	4	5		1		
" Austrian								1					1					
" Russian	2							4	5	9		20	11	12		1	2	
Hindoo								1				1						
Italian	7	1		3	3	2	25	13	103	99	19	82	218	9	1	21	38	
Jamaican							1	1	4		3	1	5					
Japanese	17	3			1		6	35	204	20		1	2			6	392	
Maltese	1											2	2					
Negro	1						10	7	4	3	3	20	11					
Newfoundland	8	3		28			36	15	40	57	214	22	19					
New Zealand									5	2			1		2	10	5	
Persian									2	1			3					

Polish—																		
Polish, N.E.S.									1			1						
" Russian								1	2				7					
Roumanian								2	1	1		1					3	
Russian—																		
Russian, N.E.S.	2			2	1	3		4	6	2	9	11	6	8		2	4	
Finnish	2			1			13	2	12	19	3	3	99	7	9	8	10	
Scandinavian—																		
Danish	4	3					18	4	10	9	12	16	6	29	18	77	9	
Icelandic	1						1	1	2	4	2			7	1	5		
Norwegian	2	3	1				39	8	23	12	11	21	11	18	107	50	14	
Swedish	1	1					32		26	44	4	12	24	29	44	44	20	
Serbian								2	1				4			2		
Spanish	1							3			2	6	1				2	
Swiss	1	1					5	8	6			12	11	1	7	7	4	
Syrian								1			1	2						
U.S.A. Citizens	2						1	1	3		6	1			3	3	2	
West Indian	5	2	3				6	5	10	5	15	9	14					
Totals	246	284	136	67	25	24	1,668	833	2,038	1,595	925	1,806	4,445	1,064	1,168	931	1,259	2

PORT OF NORTH SYDNEY.

For the fiscal year 1915-16, there arrived at the port of North Sydney 10,591 passengers, of whom 3,380 travelled saloon, and 7,211 steerage. Of the saloon passengers, 2,617 were destined to Canada, and 763 to the United States. Of the steerage passengers, 6,082 were for Canada, and 1,129 for the United States. Included in the steerage passengers for Canada were 580 returned Canadians and 5,300 tourists, leaving the immigration proper at 202 souls, a decrease, at this port, as compared with that of the preceding fiscal year of 245 persons.

Table I deals with the total arrivals of saloon passengers; table II with the total arrivals of steerage passengers; table III with the monthly arrivals of immigrants for Canada; and tables IV and V give summaries of the information obtained from immigrants for Canada upon arrival.

TABLE I.—Nationality and Sex of Saloon Passengers arriving at the Port of North Sydney, for the Fiscal Year ended March 31, 1916.

	CANADA.				UNITED STATES.				CANADA AND UNITED STATES.			
	Males.	Females.	Children.	Totals.	Males.	Females.	Children.	Totals.	Males.	Females.	Children.	Totals.
Australian	.....	.....	.....	.....	1	.....	.....	1	1	.....	.....	1
French	.....	.....	.....	.....	.....	1	.....	1	.....	1	.....	1
German	.....	.....	.....	.....	.....	1	.....	1	.....	1	.....	1
G. Britain and Ireland												
English	6	2	.....	8	32	7	.....	39	38	9	.....	47
Irish	2	.....	.....	2	5	.....	.....	5	7	.....	.....	7
Scotch	3	2	2	7	13	1	.....	14	16	3	2	21
Newfoundland	20	32	17	69	164	138	36	338	184	170	53	407
New Zealand	.....	.....	.....	.....	1	.....	.....	1	1	.....	.....	1
Polish, Russian	.....	.....	.....	.....	1	.....	.....	1	1	.....	.....	1
Russian	.....	.....	.....	.....	7	.....	.....	7	7	.....	.....	7
Scandinavian—												
Danish	.....	.....	.....	.....	2	.....	.....	2	2	.....	.....	2
Norwegian	.....	.....	.....	.....	1	.....	.....	1	1	.....	.....	1
Swedish	.....	.....	.....	.....	4	1	2	7	4	1	2	7
Syrian	.....	.....	.....	.....	3	.....	.....	3	3	.....	.....	3
U.S.A. Citizens	5	2	.....	7	232	67	23	322	237	69	23	329
Returned Canadian	535	248	123	906	.....	.....	.....	.....	535	248	123	906
Tourist	924	542	152	1,618	14	5	1	20	938	547	153	1,638
Totals	1,495	828	294	2,617	480	221	62	763	1,975	1,049	356	3,380

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TABLE II.—Nationality and Sex of Steerage Passengers arriving at the Port of North Sydney, for the Fiscal Year ended March 31, 1916.

(M.=Male; F.=Female; C.=Children; T.=Totals.)

	CANADA.				UNITED STATES.				CANADA AND UNITED STATES.			
	M.	F.	C.	T.	M.	F.	C.	T.	M.	F.	C.	Totals.
Brazilian	1			1					1			1
G. Britain and Ireland												
English	4			4	2			2	6			6
Irish	1			1					1			1
Scotch		1	2	3	2			2	2	1	2	5
Italian					1			1	1			1
Newfoundland	89	40	54	183	564	381	115	1,060	653	421	169	1,243
Portuguese					1			1	1			1
Russian—												
Russian, N.E.S.	2			2	1			1	3			3
Finnish	1			1					1			1
Norwegian					2			2	2			2
Syrian	1			1	2			2	3			3
U.S.A. Citizens	5	1		6	14	11	24	49	19	12	24	55
West Indian					5			5	5			5
Total immigration	104	42	56	202	594	392	139	1,125	698	434	195	1,327
Returned Canadian	307	134	139	580					307	134	139	580
Tourist	4,506	507	287	5,300		1	3	4	4,506	508	290	5,304
Totals	4,917	683	482	6,082	594	393	142	1,129	5,511	1,076	624	7,211

TABLE III.—Monthly arrivals of Immigrants for Canada, by Nationalities, at the Port of North Sydney, for the Fiscal Year ended March 31, 1916.

	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	Mar	Totals.
Brazilian					1								1
G. Britain and Ireland—													
English					3		1						4
Irish											1		1
Scotch												3	3
Newfoundland		5	17	12	40	26	27	1	3	11	10	31	183
Russian—													
Russian, N.E.S.				2									2
Finnish								1					1
Syrian											1		1
U.S.A. Citizens				2		2				1		1	6
Totals		5	17	16	44	28	28	2	3	12	12	35	202

TABLE IV.—Monthly arrivals of Immigrants for Canada, by Occupation and Destination, at the Port of North Sydney, for the Fiscal Year ended March 31, 1916.

	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	Mar	Totals
Agriculturists											1		1
General labourers		5		6	10	6			2	5		9	43
Mechanics			1	2	1	3	1			2	2	2	14
Clerks, traders, etc				2	4	2	1		1				10
Miners			6	2	7	7	2			1			25
Female servants			1		4		1	1		3	1		11
Not classified			9	4	18	10	23	1		1	8	24	98
Totals		5	17	16	44	28	28	2	3	12	12	35	202
Maritime Provinces		5	17	16	36	27	21	2	2	12	5	34	177
Quebec					3	1	7					1	12
Ontario					5				1		7		13
Totals		5	17	16	44	28	28	2	3	12	12	35	202

TABLE V.—Nationality, Sex, Occupation and Destination of Immigrant arrivals for Canada, at the Port of North Sydney, for the Fiscal Year ended March 31, 1916.

(M.=Male; F.=Female; C.=Children.)

—	Sex.				Trade or Occupation.								
					Farmers and Farm Labourers.			General Labourers.			Mechanics.		
	M.	F.	C.	Totals.	M.	F	C.	M.	F	C.	M.	F.	C.
Brazilian	1			1									
Great Britain and Ireland—													
English	4			4				2					
Irish	1			1							1		
Scotch		1	2	3									
Newfoundland	89	40	54	183				38	2	1	10		
Russian—													
Russian, N.E.S.	2			2									
Finnish	1			1									
Syrian	1			1	1								
U.S.A. Citizens	5	1		6							2	1	
Totals	104	42	56	202	1			40	2	1	13	1	

TABLE V.—Nationality, Sex, Occupation and Destination of Immigrant arrivals for Canada, at the Port of North Sydney, for the Fiscal Year ended March 31, 1916—*Con.*

(M.=Males; F.=Females; C.=Children.)

——	Clerks, Traders, etc.			Miners.			Female Servants.	Not classified.			Destination.		
	M.	F.	C.	M.	F.	C.		M.	F.	C.	Maritime Provinces	Quebec.	Ontario.
Brazilian								1			1		
Great Britain and Ireland—													
English								2			4		
Irish											1		
Scotch									1	2	3		
Newfoundland	6	1		24			11	11	26	53	158	12	13
Russian—													
Russian, N.E.S.	1			1							2		
Finnish								1			1		
Syrian											1		
U.S.A. Citizens	2							1			6		
Totals	9	1		25			11	16	27	55	177	12	13

PORT OF HALIFAX.

For the fiscal year 1915-16, there arrived at the port of Halifax, 3,434 passengers, of whom 760 travelled saloon and 2,674 steerage. Of the saloon passengers, 641 were destined to Canada, and 119 to the United States. Of the steerage passengers, 2,476 were for Canada and 198 for the United States. Included in the steerage passengers for Canada were 1,328 returned Canadians and 396 tourists, leaving the immigration proper at 752 souls, a decrease, at this port, as compared with that of the preceding fiscal year of 13,095 persons.

Table I deals with the total arrivals of saloon passengers; table II with the total arrivals of steerage passengers; table III with the monthly arrivals of immigrants for Canada; and tables IV and V give summaries of the information obtained from immigrants for Canada upon arrival.

TABLE I.—Nationality and Sex of Saloon Passengers arriving at the Port of Halifax, for the Fiscal Year ended March 31, 1916.

(M. = Male; F. = Female; C. = Children.)

	CANADA.				UNITED STATES.				CANADA AND UNITED STATES.			
	M.	F.	C.	Totals	M.	F.	C.	Totals	M.	F.	C.	Totals
French					1	2	3	6	1	2	3	6
Gt. Britain and Ireland												
English	5	1	2	8					5	1	2	8
Scotch	1	2	2	5	1			1	2	2	2	6
Jamaican	1			1					1			1
Newfoundland		8		8	28	29	7	64	28	37	7	72
Syrian					1			1	1			1
U.S.A. Citizens	2			2	26	21		47	28	21		49
West Indian		1		1						1		1
Returned Canadian	201	58	22	281					201	58	22	281
Tourist	176	120	39	335					176	120	39	335
Totals	386	190	65	641	57	52	10	119	443	242	75	760

TABLE II.—Nationality and Sex of Steerage Passengers arriving at the Port of Halifax, for the Fiscal Year ended March 31, 1916.

(M. = Male; F. = Female; C. = Children.)

	CANADA.				UNITED STATES.				CANADA AND UNITED STATES.			
	M.	F.	C.	Totals	M.	F.	C.	Totals	M.	F.	C.	Totals
Belgian		2	1	3						2	1	3
Dutch	14	7	29	50					14	7	29	50
French	1	1		2	5	1	1	7	6	2	1	9
Gt. Britain and Ireland												
English	98	130	131	359	5	11	5	21	103	141	136	380
Irish	6	20	5	31		1	4	5	6	21	9	36
Scotch	47	106	48	201	1	2		3	48	108	48	204
Welsh	4		1	5					4		1	5
Hebrew—												
Hebrew, N.E.S.	1			1					1			1
" Russian	1			1	3	2	1	6	4	2	1	7
Italian	1			1					1			1
Jamaican		2	2	4						2	2	4
Newfoundland	22	44	5	71	62	46	18	126	84	90	23	197
Finnish		1	4	5						1	4	5
Scandinavian:												
Danish	3			3					3			3
Norwegian	3	4		7	1			1	4	4		8
Swedish					2	1		3	2	1		3
Swiss	1			1					1			1
U.S.A. Citizens					25	1		26	25	1		26
West Indian	2	2	3	7					2	2	3	7
Total immigration	204	319	229	752	104	65	29	198	308	384	258	950
Returned Canadian	1,154	174	100	1,328					1,054	174	100	1,328
Tourist	293	78	25	296					293	78	25	396
Totals	1,551	571	354	2,476	104	65	29	198	1,655	636	383	2,764

TABLE III.—Monthly arrivals of Immigrants for Canada, by Nationalities, at the Port of Halifax, for the Fiscal Year ended March 31, 1916.

	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	Mar	Totals
Belgian	3												3
Dutch	50												50
French	2												2
G. Britain and Ireland													
English	265		85	3				1		1	1	3	359
Irish	26			2							2	1	31
Scotch	122		3	1				1	12	1	22	39	201
Welsh	5												5
Hebrew—													
Hebrew, N.E.S.	1												1
" Russian	1												1
Italian	1												1
Jamaican		3	1										4
Newfoundland	4	13	3	5	11	15	2	1	1	7	7	2	71
Finnish	5												5
Scandinavian—													
Danish	1											2	3
Norwegian	7												7
Swiss	1												1
West Indian		6	1										7
Totals	494	22	93	11	11	15	2	3	13	9	32	47	752

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TABLE IV.—Monthly arrivals of Immigrants for Canada, by Occupation and Destination, at the Port of Halifax, for the Fiscal Year ended March 31, 1916.

	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	Mar	Totals
Agriculturists	194			1					1	1	5	13	215
General labourers	34	4			1	3			3		1		46
Mechanics	61	3	1		2	1		1	1	4	5	5	84
Clerks, traders, etc	25	6				1		1	2			2	37
Miners	5			2		4							11
Female servants	96	5	4	1	5	5	1		2	1	11	17	148
Not classified	79	4	88	7	3	1	1	1	4	3	10	10	211
Totals	494	22	93	11	11	15	2	3	13	9	32	47	752
Maritime Provinces	144	22	92	10	11	12		1	1	6	3	4	306
Quebec	28		1	1		1	2	2	6	2	5	1	49
Ontario	153					2			4	1	10	18	188
Manitoba	59								2		6	8	75
Saskatchewan	61										7	10	78
Alberta	28											2	30
British Columbia	21										1	4	26
Totals	494	22	93	11	11	15	2	3	13	9	32	47	752

TABLE V.—Nationality, Sex, Occupation and Destination of Immigrant arrivals for Canada, at the Port of Halifax, for the Fiscal Year Year ended March 31, 1916—*Con.*

(M=Male; F=Female; C=Children.)

	Sex.				Trade or Occupation.											
					Farmers and Farm Labourers.			General Labourers.			Mechanics.			Clerks, Traders, etc.		
	M.	F.	C.	Totals.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.
Belgian		2	1	3												
Dutch	14	7	29	50	12	7	29				2					
French	1	1		2												
G. Britain and Ireland—																
English	98	130	131	359	51	23	26	4	4	4	14	13	13	8	6	
Irish	6	20	5	31	5	2					1	1			2	5
Scotch	47	106	48	201	29	12	11	8	5	13	3	9	6	1	6	
Welsh	4		1	5	1						1					
Hebrew—																
Hebrew, N.E.S.	1			1												
" Russian	1			1							1					
Italian	1			1												
Jamaican		2	2	4								1	2			
Newfoundland	22	44	5	71				8			4	4	1	2	2	
Finnish		1	4	5								1	4			
Scandinavian—																
Danish	3			3	1						2					
Norwegian	3	4		7	2	4					1					
Swiss	1			1												
West Indian	2	2	3	7										1	1	3
Totals	204	319	229	752	101	48	66	20	9	17	29	29	26	12	17	8

TABLE V.—Nationality, Sex, Occupation and Destination of Immigrant arrivals for Canada, at the Port of Halifax, for the Fiscal Year ended March 31, 1916.—*Concluded.*

(M. = Males; F. = Females; C. = Children.)

	Trade or Occupation—*Con.*							Destination.						
	Miners.			Female servants	Not Classified.			Maritime Provinces.	Quebec.	Ontario.	Manitoba.	Saskatchewan.	Alberta.	British Columbia.
	M.	F.	C.		M.	F.	C.							
Belgian		1	1	1				2	1					
Dutch								47			2	1		
French					1	1					2			
G. Britain and Ireland—														
English	1	1		56	20	27	88	149	20	96	21	44	18	11
Irish				12		3		3		15	11	2		
Scotch		1	1	53	6	20	17	35	14	61	39	26	11	15
Welsh	1				1		1		1	4				
Hebrew—														
Hebrew, N.E.S.					1					1				
" Russian									1					
Italian					1			1						
Jamaican				1				3	1					
Newfoundland	4			24	4	14	4	56	10	5				
Finnish										5				
Scandinavian—														
Danish								2	1					
Norwegian								1				5	1	
Swiss					1					1				
West Indian				1	1			7						
Totals	6	3	2	148	36	65	110	306	49	188	75	78	30	26

PORT OF ST. JOHN.

For the fiscal year 1915-16, there arrived at the Port of St. John 10,030 passengers, of whom 425 travelled saloon and 9,605 steerage. Of the saloon passengers, 423 were destined to Canada and 2 to the United States. Of the steerage passengers, 9,387 were for Canada and 218 for the United States. Included in the steerage passengers for Canada were 4,846 returned Canadians and 3,102 tourists, leaving the immigration proper at 1,439 souls, a decrease at this port, as compared with that of the preceding fiscal year of 3,603 persons.

Table I deals with the total arrivals of saloon passengers; table II with the total arrivals of steerage passengers; table III with the monthly arrivals of immigrants for Canada; and tables IV and V give summaries of the information obtained from immigrants for Canada upon arrival.

TABLE I.—Nationality and Sex of Saloon Passengers arriving at the Port of St. John, for the Fiscal Year ended March 31, 1916.

(M=Male; F=Female; C=Children; T=Totals.)

	CANADA.				UNITED STATES.				CANADA AND UNITED STATES.			
	M.	F.	C.	T.	M.	F.	C.	T.	M.	F.	C.	T.
Bermudian	.....	1	.....	1	.....	.....	.....	.....	.....	1	.....	1
English	3	3	.....	6	.....	.....	.....	.....	3	3	.....	6
U.S.A. Citizens	.....	.....	.....	.....	1	.....	.....	1	1	.....	.....	1
Returned Canadian	79	102	22	203	.....	.....	.....	.....	79	102	22	203
Tourist	112	75	26	213	.....	1	.....	1	112	76	26	214
Totals	194	181	48	423	1	1	.....	2	195	182	48	425

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TABLE II.—Nationality and Sex of Steerage Passengers arriving at the Port of St. John, for the Fiscal Year ended March 31, 1916.

(M = Male, F = Female; C = Children; T = Totals.)

	CANADA.				UNITED STATES.				CANADA AND UNITED STATES.			
	M.	F.	C.	T.	M.	F.	C.	T.	M.	F.	C.	T.
African, South	.....	1	.....	1	.....	.....	.....	.....	.....	1	.....	1
Australian	.....	1	.....	1	.....	.....	.....	.....	.....	1	.....	1
Belgian	10	10	.....	20	1	.....	.....	1	11	10	.....	21
Dutch	10	5	16	31	.....	.....	.....	.....	10	5	16	31
French	3	4	5	12	.....	1	.....	1	3	5	5	13
G. Britain and Ireland												
English	255	539	250	1,044	26	43	29	98	281	582	279	1,142
Irish	20	79	9	108	5	6	6	17	25	85	15	125
Scotch	21	81	27	129	2	1	4	7	23	82	31	136
Welsh	2	7	1	10	.....	1	.....	1	2	8	1	11
Greek	2	.....	.....	2	.....	.....	.....	.....	2	.....	.....	2
Hebrew—												
Hebrew, N.E.S.	1	.....	.....	1	1	.....	.....	1	2	.....	.....	2
" Russian	1	.....	.....	1	.....	.....	.....	.....	1	.....	.....	1
Negro	.....	2	2	4	.....	.....	.....	.....	.....	2	2	4
Newfoundland	.....	.....	.....	.....	1	.....	.....	1	1	.....	.....	1
Russian—												
Russian, N.E.S.	4	6	4	14	2	4	.....	6	6	10	4	20
Finnish	.....	5	3	8	1	2	.....	3	1	7	3	11
Scandinavian—												
Danish	9	1	.....	10	6	3	6	15	15	4	6	25
Icelandic	2	.....	.....	2	.....	.....	.....	.....	2	.....	.....	2
Norwegian	8	3	.....	11	5	1	.....	6	13	4	.....	17
Swedish	5	1	.....	6	3	.....	.....	3	8	1	.....	9
Spanish	1	.....	.....	1	.....	.....	.....	.....	1	.....	.....	1
Swiss	4	3	.....	7	.....	.....	.....	.....	4	3	.....	7
U.S.A. Citizens	.....	1	.....	1	54	3	.....	57	54	4	.....	58
West Indian	4	10	1	15	1	.....	.....	1	5	10	1	16
Total immigration	362	759	318	1,439	108	65	45	218	470	824	363	1,657
Returned Canadian	3,483	831	532	4,846	.....	.....	.....	.....	3,483	831	532	4,846
Tourist	2,968	96	38	3,102	.....	.....	.....	.....	2,968	96	38	3,102
Totals	6,813	1,686	888	9,387	108	65	45	218	6,921	1,751	933	9,605

TABLE III.—Monthly arrivals of Immigrants for Canada, by Nationalities, at the Port of St. John, for the Fiscal Year ended March 31, 1916.

——	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Totals
African, South	1												1
Australian	1												1
Belgian	9								5	2		4	20
Dutch	28											3	31
French									6		3	3	12
Great Britain and Ireland—													
English	461		1			2	1	35	151	141	110	142	1,044
Irish	45							19	6	13	14	11	108
Scotch	33							12	26	19	22	17	129
Welsh	6							2	1	1			10
Greek											1	1	2
Hebrew—													
Hebrew, N.E.S.	1												1
" Russian												1	1
Negro				4									4
Russian—													
Russian, N.E.S.	12								1			1	14
Finnish	6							1		1			8
Scandinavian—													
Danish	2								2		1	5	10
Icelandic									1	1			2
Norwegian	3								2	2	1	3	11
Swedish	4									1		1	6
Spanish	1												1
Swiss	1								5		1		7
U.S.A. Citizens							1						1
West Indian			6		3	2			3		1		15
Totals	614		7	4	3	4	2	69	209	181	154	192	1,439

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TABLE IV.—Monthly arrivals of Immigrants for Canada, by Occupation and Destination, at the Port of St. John, for the Fiscal Year ended March 31, 1916.

—	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Totals
Agriculturists	278		1					9	35	24	25	50	422
General labourers	24							7	14	15	6	4	70
Mechanics	43		1					17	40	34	25	24	184
Clerks, traders, etc	19								12	17	3	16	67
Miners	1							1				3	5
Female servants	84		4	1		1		24	36	28	45	30	253
Not classified	165		1	3	3	3	2	11	72	63	50	65	438
Totals	614		7	4	3	4	2	69	209	181	154	192	1,439
Maritime Provinces	79		4	3	1	2		14	18	10	6	11	148
Quebec	41			1		1	2	11	30	22	25	27	160
Ontario	232		3		2			13	74	79	51	64	518
Manitoba	63					1		4	16	10	23	15	132
Saskatchewan	104							8	38	28	23	44	245
Alberta	44							13	16	13	14	17	117
British Columbia	51							6	17	19	12	14	119
Totals	614		7	4	3	4	2	69	209	181	154	192	1,439

TABLE V.—Nationality, Sex, Occupation and Destination of Immigrant arrivals for Canada, at the Port of St. John, for the Fiscal Year ended March 31, 1916.

(M.=Male; F.=Female; C.=Children.)

	Sex.				Trade or Occupation.											
					Farmers and Farm Labourers.			General Labourers.			Mechanics.			Clerks, Traders, etc.		
	M.	F.	C.	Totals.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.
African, South		1		1											1	
Australian		1		1												
Belgian	10	10		20	1			2	1		3				2	
Dutch	10	5	16	31	7	4	16				3					
French	3	4	5	12	3	3	5					1				
Great Britain and Ireland:																
English	255	539	250	1,044	119	113	79	18	21	10	26	70	41	8	26	11
Irish	20	79	9	108	11	5	2	1	2		2	6		2	4	1
Scotch	21	81	27	129	8	10	4	3	1	4	4	10	7	1	4	5
Welsh	2	7	1	10		2	1				2					
Greek	2			2	1						1					
Hebrew:																
Hebrew, N.E.S	1			1												
" Russian	1			1										1		
Negro		2	2	4												
Russian:																
Russian, N.E.S	4	6	4	14	2	2	3				1	3	1	1		
Finnish		5	3	8		1	2		1	1						
Scandinavian:																
Danish	9	1		10	6			1			1					
Icelandic	2			2				2								
Norwegian	8	3		11	5	1		1								
Swedish	5	1		6	4						1					
Spanish	1			1												
Swiss	4	3		7	2			1								
U.S.A. Citizens		1		1												
West Indian	4	10	1	15							1					
Totals	362	759	318	1,439	169	141	112	29	26	15	45	90	49	13	37	17

TABLE V.—Nationality, Sex, Occupation and Destination of Immigrant arrivals for Canada at the Port of St. John, for the Fiscal Year ended March 31, 1916.—*Con.*

	TRADE OR OCCUPATION—*Con.*							DESTINATION.						
	Miners.			Female Servants.	Not Classified.			Maritime Provinces	Quebec.	Ontario.	Manitoba.	Saskatchewan.	Alberta.	British Columbia
	M.	F.	C.		M.	F.	C.							
African, South											1			
Australian						1								1
Belgian					4	7			14	5				1
Dutch				1				26	3		2			
French								5	1			3	3	
Great Britain and Ireland:														
English		2		151	84	156	109	70	74	419	93	211	82	95
Irish	2	1		44	2	17	6	13	27	33	12	11	6	6
Scotch				40	5	16	7	10	32	42	9	13	12	11
Welsh				5				3		3	2		1	1
Greek								1	1					
Hebrew:														
Hebrew, N.E.S.					1								1	
" Russian											1			
Negro					1	1	2	3	1					
Russian:														
Russian, N.E.S.						1			1	5	7		1	
Finnish				3					1	1			3	3
Scandinavian:														
Danish					1	1		3	2		2	2	1	
Icelandic								1			1			
Norwegian				1	2	1		1	1	1	1		6	1
Swedish						1		3		1	1	1		
Spanish					1			1						
Swiss				2	1	1				2		4	1	
U.S.A. Citizens						1			1					
West Indian				5	3	5	1	8	1	6				
Totals	2	3		253	104	209	125	148	160	518	132	245	117	119

PORT OF QUEBEC.

For the fiscal year 1915-16, there arrived at the port of Quebec, 16,726 passengers, of whom 173 travelled saloon and 16,553 steerage. Of the saloon passengers, 161 were destined to Canada and 12 to the United States. Of the steerage passengers 15,631 were for Canada, and 922 for the United States. Included in the steerage passengers for Canada were 7,572 returned Canadians and 1,891 tourists, leaving the immigration proper at 6,168 souls, a decrease, at this port, as compared with that of the preceding fiscal year, of 43,263 persons.

Table I deals with the total arrivals of saloon passengers; table II with the total arrivals of steerage passengers; table III with the monthly arrivals of immigrants for Canada; and tables IV and V give summaries of the information obtained from immigrants for Canada upon arrival.

TABLE I.—Nationality and Sex of Saloon Passengers arriving at the Port of Quebec, for the Fiscal Year ended March 31, 1916.

(M. = Male; F. = Female; C. = Children; T. = Totals.)

	Canada.				United States.				Canada and United States.			
	M.	F.	C.	T.	M.	F.	C.	T.	M.	F.	C.	T.
Gt. Britain and Ireland:												
English	3	3	.....	6	2	1	.....	3	5	4	.....	9
Irish	2	.....	.....	2	.....	.....	.....	.....	2	.....	.....	2
Scotch	.....	3	.....	3	1	1	.....	2	1	4	.....	5
Russian	.....	.....	.....	.....	2	.....	.....	2	2	.....	.....	2
U.S.A. Citizens	.....	.....	.....	.....	3	2	.....	5	3	2	.....	5
Returned Canadian	63	26	4	93	.....	.....	.....	.....	63	26	4	93
Tourist	45	9	3	57	.....	.....	.....	.....	45	9	3	57
Totals	113	41	7	161	8	4	.....	12	121	45	7	173

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TABLE II.—Nationality and Sex of Steerage Passengers arriving at the Port of Quebec, for the Fiscal Year ended March 31, 1916.

(M. = Male; F. = Female; C. = Children; T. = Totals.)

	CANADA.				UNITED STATES.				CANADA AND UNITED STATES.			
	M.	F.	C.	T.	M.	F.	C.	T.	M.	F.	C.	T.
African, South	1	1	4	6					1	1	4	6
Australian	2	1		3					2	1		3
Austrian	2	4	1	7					2	4	1	7
Belgian	31	31	17	79		1		1	31	32	17	80
Dutch	9	6	2	17	3	2		5	12	8	2	22
French	13	31	10	54					13	31	10	54
German		1		1		1		1		2		2
Great Britain and Ireland—												
English	755	1,844	1,188	3,787	152	143	82	377	907	1,987	1,270	4,164
Irish	151	299	125	575	41	30	10	81	192	329	135	656
Scotch	266	741	395	1,402	62	113	73	248	328	854	468	1,650
Welsh	14	34	16	64		1		1	14	35	16	65
Greek		3		3						3		3
Hebrew—												
Hebrew, N.E.S	5	2		7					5	2		7
" Russian	2	2	6	10	1			1	3	2	6	11
Italian	3	1		4					3	1		4
New Zealand		1		1						1		1
Roumanian	2			2					2			2
Russian—												
Russian, N.E.S	4	5	6	15	1	5	9	15	5	10	15	30
Finnish	3	4	1	8	2	8	8	18	5	12	9	26
Scandinavian—												
Danish	23	11	11	45	3	1		4	26	12	11	49
Icelandic	1	1	4	6					1	1	4	6
Norwegian	14	11	2	27	25	3		28	39	14	2	55
Swedish	8	12	13	33	14	4	6	24	22	16	19	57
Swiss	9	2		11	1	1		2	10	3		13
Turkish—												
Armenian					1			1	1			1
Syrian	1			1					1			1
U. S. A. Citizens					75	27	13	115	75	27	13	115
Total immigration	1,319	3,048	1,801	6,168	381	340	201	922	1,700	3,388	2,002	7,090
Returned Canadian	4,605	1,956	1,011	7,572					4,605	1,956	1,011	7,572
Tourist	1,642	222	27	1,891					1,642	222	27	1,891
Totals	7,566	5,226	2,839	15,631	381	340	201	922	7,947	5,566	3,040	16,553

TABLE III.—Monthly arrivals of Immigrants for Canada, by Nationalities, at the Port of Quebec, for the Fiscal Year ended March 31, 1916.

——	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Totals.
African, South		5	1					6
Australian		1			2			3
Austrian	3	3			1			7
Belgian	35	7	10	14	4	7	2	79
Dutch	5	3	3	2			4	17
French	12	2	7	5	13	8	7	54
German			1					1
Great Britain and Ireland—								
English	1,028	562	491	550	435	513	208	3,787
Irish	155	90	65	93	76	54	42	575
Scotch	312	360	128	191	178	135	98	1,402
Welsh	20	5	15	19		4	1	64
Greek	2						1	3
Hebrew—								
Hebrew, N.E.S	1			3	3			7
" Russian	4	5	1					10
Italian	1	2	1					4
New Zealand	1							1
Roumanian	1						1	2
Russian—								
Russian, N.E.S		5		7	1	1	1	15
Finnish	4		1	1	2			8
Scandinavian—								
Danish	6	6	11	9	4	9		45
Icelandic	1			5				6
Norwegian	8		3	4	4	2	6	27
Swedish	8	2	3	9	7	2	2	33
Swiss	7		4					11
Syrian	1							1
Totals	1,615	1,058	745	912	730	735	373	6,168

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TABLE IV.—Monthly arrivals of Immigrants for Canada, by Occupation and Destination, at the Port of Quebec, for the Fiscal Year ended March 31, 1916.

	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Totals.
Agriculturists	405	247	149	162	198	110	41	1,312
General labourers	163	108	48	56	37	56	50	518
Mechanics	249	133	105	128	48	59	43	765
Clerks, traders, etc	110	58	47	62	23	18	17	335
Miners	10	4	9	20	3	2	3	51
Female servants	274	203	143	108	119	111	73	1,031
Not classified	404	305	244	376	302	379	146	2,156
Totals	1,615	1,058	745	912	730	735	373	6,168
Maritime Provinces	57	47	15	37	65	16	6	243
Quebec	257	203	141	159	112	177	89	1,138
Ontario	702	455	308	356	396	286	161	2,664
Manitoba	190	128	73	115	35	62	33	636
Saskatchewan	154	109	91	70	42	62	39	567
Alberta	138	58	78	106	27	70	25	502
British Columbia	117	58	39	69	53	62	20	418
Totals	1,615	1,058	745	912	730	735	373	6,168

TABLE V.—Nationality, Sex, Occupation and Destination of Immigrant arrivals for Canada, at the Port of St. John, for the Fiscal Year ended March 31, 1916.

(M.=Male; F.=Female; C.=Children.)

—	Sex.				Trade or Occupation.								
					Farmers and Farm Labourers.			General Labourers.			Mechanics.		
	M.	F.	C.	Totals.	M.	F.	C.	M.	F.	C.	M.	F.	C.
African, South	1	1	4	6									
Australian	2	1		3									
Austrian	2	4	1	7	1	2							
Belgian	31	31	17	79	12	12	16	4	1	1	5	5	
Dutch	9	6	2	17	6	2	1				1	2	1
French	13	31	10	54	5	6	2	2	1			2	2
German		1		1									
Great Britain and Ireland—													
English	755	1,844	1,188	3,787	266	304	278	62	95	112	103	203	154
Irish	151	299	125	575	63	24	23	22	25	32	20	19	23
Scotch	266	741	395	1,402	93	65	64	28	49	59	61	81	58
Welsh	14	34	16	64	6	3	5	1			1	6	1
Greek		3		3									
Hebrew—													
Hebrew, N.E.S.	5	2		7								1	
" Russian	2	2	6	10					1	3	1		
Italian	3	1		4	1								
New Zealand		1		1		1							
Roumanian	2			2									
Russian—													
Russian, N.E.S.	4	5	6	15	1		1		1	2	1	1	
Finnish	3	4	1	8	2	3	1	1					
Scandinavian—													
Danish	23	11	11	45	13	3	6	5			3	1	
Icelandic	1	1	4	6				1					
Norwegian	14	11	2	27	9	3	1	3			2		
Swedish	8	12	13	33	4	2	1	1	1	5	2	1	
Swiss	9	2		11	1						3	1	
Syrian	1			1									
Totals	1,319	3,048	1,801	6,168	483	430	399	130	174	214	203	323	239

TABLE V.—Nationality, Sex, Occupation and Destination of Immigrant Arrivals for Canada, at the Port of St. John, for the Fiscal Year ended March 31, 1916.—*Con.*

(M.=Male; F.=Female; C.=Children.)

—	Trade or Occupation.										Destination.						
	Clerks, Traders, etc.			Miners.			Female Servants.	Not Classified.			Maritime Provinces.	Quebec.	Ontario.	Manitoba.	Saskatchewan	Alberta.	British Columbia.
	M.	F.	C.	M.	F.	C.		M.	F.	C.							
African, South								1	1	4		1			5		
Australian	1							1	1		1	1	1				3
Austrian	1	1	1						1			4					
Belgian	1			1			6	8	7		5	22	20	12	16	1	3
Dutch							2	2			3	5	2	4	1	2	
French	1						4	5	18	6		39	4	6	3		2
German									1							1	
Great Britain and Ireland—																	
English	46	92	33	8	6	6	571	270	573	605	90	591	1,835	333	382	313	243
Irish	7	19	4	4	1	1	143	35	68	42	54	116	220	83	38	29	35
Scotch	23	55	33	9	4	6	278	52	209	175	68	303	536	166	103	109	117
Welsh		1	2				12	6	12	8	2	15	19	13	5	3	7
Greek		1					1		1			1	2				
Hebrew—																	
Hebrew, N.E.S.	5	1										3	3	1			
" Russian	1								1	3		2	8				
Italian	1							1	1		1	3					
New Zealand													1				
Roumanian								2				1					1
Russian—																	
Russian, N.E.S.				1	1	3		1	2		6	6	1			1	1
Finnish							1				2	1	5				
Scandinavian—																	
Danish		1					2	2	4	5	4	5	1	8	3	23	1
Icelandic									1	4	1					5	
Norwegian		2	1				6				6	6	2	3	3	5	2
Swedish	1						5		3	7		2	3	7	8	10	3
Swiss								5	1			10	1				
Syrian								1				1					
Totals	88	173	74	23	12	16	1,031	392	905	859	243	1,138	2,664	636	567	502	418

PORT OF VANCOUVER.

For the fiscal year 1915-16, there arrived at the port of Vancouver 3,097 passengers, of whom 970 travelled saloon and 2,127 steerage. Of the saloon passengers, 754 were destined to Canada and 216 to the United States. Of the steerage passengers, 1,707 were for Canada, and 420 for the United States. Included in the steerage passengers for Canada were 561 returned Canadians and 1,022 tourists, leaving the immigration proper at 124 souls, a decrease at this port, as compared with that of the preceding fiscal year of 1,033 persons.

Table I deals with the total arrivals of saloon passengers; table II with the total arrivals of steerage passengers; table III with the monthly arrivals of immigrants for Canada; and tables IV and V give summaries of the information obtained from immigrants for Canada upon arrival.

TABLE I.—Nationality and Sex of Saloon Passengers arriving at the Port of Vancouver for the Fiscal Year ended March 31, 1916.

(M=Males; F=Females; C=Children.)

	Canada.				United States.				Canada and United States.			
	M.	F.	C.	Totals	M.	F.	C.	Totals	M.	F.	C.	Totals.
Australian					4	3		7	4	3		7
Dutch					1	2		3	1	2		3
French					1			1	1			1
G. Britain and Ireland—												
English	1	4	5	10	15	9	2	26	16	13	7	36
Irish					3	2		5	3	2		5
Scotch					1			1	1			1
Japanese						1		1		1		1
New Zealand					2	2		4	2	2		4
Russian					3	1		4	3	1		4
Swedish					1			1	1			1
U.S.A. Citizens					85	64	7	156	85	64	7	156
Returned Canadian	38	24	6	68					38	24	6	68
Tourist	359	268	49	676	5	2		7	364	270	49	683
Totals	398	296	60	754	121	86	9	216	519	382	69	970

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TABLE II.—Nationality and Sex of Steerage Passengers arriving at the Port of Vancouver, for the Fiscal Year ended March 31, 1916.

(M=Males; F=Females; C=Children.)

	CANADA.				UNITED STATES.				CANADA AND UNITED STATES.			
	M.	F.	C.	Totals	M.	F.	C.	Totals	M.	F.	C.	Totals.
African, South		1		1	1			1	1	1		2
Australian	6	16	7	23	34	19	16	69	40	29	23	92
Chinese	9	1		10					9	1		10
Dutch					1			1	1			1
French					1	1		2	1	1		2
G. Britain and Ireland—												
English	25	14	11	50	29	17	10	56	54	31	21	106
Irish	4	1		5	11	6		17	15	7		22
Scotch	3	5	1	9	11	12	6	29	14	17	7	38
Welsh	1	1		2					1	1		2
Hebrew—												
Hebrew, N.E.S					2	1	1	4	2	1	1	4
" Russian					1	2	2	5	1	2	2	5
Italian					1			1	1			1
Japanese	4	3		7					4	3		7
New Zealand	6	7	2	15	14	9	7	30	20	16	9	45
Portuguese					1			1	1			1
Russian—												
Russian, N.E.S	1			1	11	9	9	29	12	9	9	30
Finnish					6	1	1	8	6	1	1	8
Scandinavian—												
Danish	1			1	5	1		6	6	1		7
Norwegian					7	1		8	7	1		8
Swedish					3			3	3			3
Swiss					1			1	1			1
U.S.A. Citizens					70	23	13	106	70	23	13	106
Total immigration	60	43	21	124	210	102	65	377	270	145	86	501
Returned Canadian	466	59	36	561					466	59	36	561
Tourist	826	145	51	1,022	40	2	1	43	866	147	52	1,065
Totals	1,352	247	108	1,707	250	104	66	420	1,602	351	174	2,127

TABLE III.—Monthly arrivals of Immigrants for Canada, by Nationalities, at the Port of Vancouver, for the Fiscal Year ended March 31, 1916.

	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	Mar	Totals
African, South						1							1
Australian		1		2	1	6	1		5	4		3	23
Chinese									6	2		2	10
G. Britain and Ireland—													
English	7		11	8	2	5	1	6	1	3	3	3	50
Irish	2		1			1	1						5
Scotch		1	4				1		2	1			9
Welsh										2			2
Japanese							3			2		2	7
New Zealand	6		7			2							15
Russian				1									1
Danish	1												1
Totals	16	2	23	11	3	15	7	6	14	14	3	10	124

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TABLE IV.—Monthly arrivals of Immigrants for Canada, by Occupation and Destination at the Port of Vancouver, for the Fiscal Year ended March 31,1916.

	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	Mar	Totals
Agriculturists	8		7	4		1					1	1	22
General labourers				2		4						1	7
Mechanics	1	1	2	1					2	1			8
Clerks, traders, etc					1		4		2	5		4	16
Miners													
Female servants			3				1		1	1		2	8
Not classified	7	1	11	4	2	10	2	6	9	7	2	2	63
Totals	16	2	23	11	3	15	7	6	14	14	3	10	124
Maritime Provinces				1					2				3
Quebec	1		1	1			1		2				6
Ontario			2	1		6			3	1	2	5	20
Manitoba		1		1	1	1				1			5
Saskatchewan			5										5
Alberta	8	1	8	5	1	1			1	2	1		28
British Columbia	7		7	2	1	7	6	6	6	10		5	57
Totals	16	2	23	11	3	15	7	6	14	14	3	10	124

TABLE V.—Nationality, Sex, Occupation and Destination of Immigrant arrivals, for Canada, at the Port of Vancouver, for the Fiscal Year ended March 31, 1916.

(M.=Male; F.=Female; C.=Children.)

	Sex.				Trade or Occupation.											
					Farmers and Farm Labourers.			General Labourers.			Mechanics.			Clerks, Traders, etc.		
	M.	F.	C.	Totals.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.
African, South	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Australian	6	10	7	23	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	1	.....
Chinese	9	1	.....	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	.....	.....
Gt. Britain and Ireland:																
English	25	14	11	50	10	1	.....	3	1	2	4	.....	.....	2	.....	.....
Irish	4	1	.....	5	2	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....
Scotch	3	5	1	9	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Welsh	1	1	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....
Japanese	4	3	.....	7	.....	.....	.....	1	.....	.....	.....	.....	.....	3	1	.....
New Zealand	6	7	2	15	6	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Russian	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Danish	1	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals	60	43	21	124	19	3	.....	4	1	2	7	1	.....	13	3	.....

TABLE V.—Nationality, Sex, Occupation and Destination of Immigrant arrivals, for Canada, at the Port of Vancouver, for the Fiscal Year ended March 31, 1916.—*Con.*

(M.=Male; F.=Female; C.=Children.)

	TRADE OR OCCUPATION—*Con.*							DESTINATION.						
	Miners.			Female Servants.	Not Classified.			Maritime Provinces	Quebec.	Ontario.	Manitoba.	Saskatchewan.	Alberta.	British Columbia
	M.	F.	C.		M.	F.	C.							
African, South						1					1			
Australian				2	4	7	7			2	1		4	16
Chinese					3	1		2	2	3	1			2
Gt. Britain and Ireland:														
English				4	6	8	9	1	4	10	1	3	12	19
Irish					1					2			1	2
Scotch				2	2	3	1			3	1	2		3
Welsh														2
Japanese						2							10	7
New Zealand						5	2							5
Russian					1								1	1
Danish														
Totals				8	17	27	19	3	6	20	5	5	28	57

PORT OF VICTORIA.

For the fiscal year 1915-16, there arrived at the port of Victoria 4,195 passengers, of whom 432 travelled saloon and 3,763 steerage. Of the saloon passengers, 270 were destined to Canada and 162 to the United States. Of the steerage passengers, 3,464 were for Canada and 299 for the United States. Included in the steerage passengers for Canada were 2,803 returned Canadians and 164 tourists, leaving the immigration proper at 497 souls, a decrease, at this port, as compared with that of the preceding fiscal year of 549 persons.

Table I deals with the total arrivals of saloon passengers; table II with the total arrivals of steerage passengers; table III with the monthly arrivals of immigrants for Canada; and tables IV and V give summaries of the information obtained from immigrants for Canada upon arrival.

TABLE I.—Nationality and Sex of Saloon Passengers arriving at the Port of Victoria, for the Fiscal Year ended March 31, 1916.

(M. = Male; F. = Female; C. = Children; T. = Totals.)

	Canada.				United States.				Canada and United States.			
	M.	F.	C.	T.	M.	F.	C.	T.	M.	F.	C.	T.
Australian					3	3	2	8	3	3	2	8
French					2			2	2			2
German						1		1		1		1
G. Britain and Ireland												
English	2			2	6	4		10	8	4		12
Irish					2	1		3	2	1		3
Scotch	3	3		6	2			2	5	3		8
Japanese	5	2		7	1			1	6	2		8
New Zealand		1		1		1		1		2		2
Polish, Russian					1			1	1			1
Portuguese						1		1		1		1
Russian					2			2	2			2
Norwegian						1		1		1		1
U.S.A. Citizens					74	44	9	127	74	44	9	127
Returned Canadian	27	16	3	46					27	16	3	46
Tourist	106	77	25	208	2			2	108	77	25	210
Totals	143	99	28	270	95	56	11	162	238	155	39	432

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TABLE II.—Nationality and Sex of Steerage Passengers arriving at the Port of Victoria, for the Fiscal Year ended March 31, 1916.

(M=Male; F=Female; C=Children.)

	CANADA.				UNITED STATES.				CANADA AND UNITED STATES.			
	M.	F.	C.	Totals	M.	F.	C.	Totals	M.	F.	C.	Totals.
Australian		2	2	4	31	8	4	43	31	10	6	47
Austrian						1	1	2		1	1	2
Belgian					1			1	1			1
Chinese	33	17	28	78					33	17	28	78
French						1		1		1		1
G. Britain and Ireland—												
English	5	3		8	20	11	1	32	25	14	1	40
Irish		1		1	14	1		15	14	2		16
Scotch	3			3	6	1		7	9	1		10
Welsh					1			1	1			1
Greek					1			1	1			1
Hawaiian	1			1	1			1	2			2
Hebrew, Russian	3			3					3			3
Italian					1			1	1			1
Japanese	144	230	20	394	2	4		6	146	234	20	400
Newfoundland					1		4	5	1		4	5
New Zealand			2	2	15	4	1	20	15	4	3	22
Polish, Russian					1			1	1			1
Portuguese						1	2	3		1	2	3
Russian—												
Russian, N.E.S.	1			1	10			10	11			11
Finnish					3			3	3			3
Scandinavian—												
Danish					3			3	3			3
Norwegian					3			3	3			3
Swedish					1			1	1			1
Swiss	1			1	1			1	2			2
Syrian					1			1	1			1
U.S.A. Citizens		1		1	67	48	22	137	67	49	22	138
Total immigration	191	254	52	497	184	80	35	299	375	334	87	796
Returned Canadian	2,710	61	32	2,803					2,710	61	32	2,803
Tourist	142	20	2	164					142	20	2	164
Totals	3,043	335	86	3,464	184	80	35	299	3,227	415	121	3,763

TABLE III.—Monthly arrivals of Immigrants for Canada, by Nationalities, at the Port of Victoria, for the Fiscal Year ended March 31, 1916.

——	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Totals
Australian									1			3	4
Chinese	2	3	11	11	11	2	19	5	2	2	5	5	78
Great Britain and Ireland—													
English		1	1					4			1	1	8
Irish						1							1
Scotch	2							1					3
Hawaiian							1						1
Hebrew, Russian		3											3
Japanese	47	55	56	37	30	20	53	14	20	11	25	26	394
New Zealand			2										2
Russian								1					1
Swiss	1												1
U.S.A. Citizens												1	1
Totals	52	62	70	48	41	23	73	25	23	13	31	36	497

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TABLE IV.—Monthly arrivals of Immigrants for Canada, by Occupation and Destination, at the Port of Victoria, for the Fiscal Year ended March 31, 1916.

——	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Totals
Agriculturists	18	6	6	3	9	4	4	1	1	3	2	10	67
General labourers	2	5	6	6	2	1	7		8	2	4	8	51
Mechanics	1	1		1			2	1	4			1	11
Clerks, traders, etc.	2	4	11	11	9	4	16	6	1	2	11	4	81
Miners												1	1
Female servants	1						2				4		7
Not classified	28	46	47	27	21	14	42	17	9	6	10	12	279
Totals	52	62	70	48	41	23	73	25	23	13	31	36	497
Quebec	2	1	1		6		6	1				1	18
Ontario			3	1		1	2	1			1	1	10
Manitoba		3						1					4
Saskatchewan			2				1		1		1		5
Alberta	1	1	2		3	1		1	1				10
British Columbia	49	57	62	47	32	21	64	21	21	13	29	34	450
Totals	52	62	70	48	41	23	73	25	23	13	31	36	497

TABLE V.—Nationality, Sex, Occupation and Destination of Immigrant arrivals for Canada, at the Port of Victoria, for the Fiscal Year ended March 31, 1916.

(M.=Male; F.=Female; C.=Children.)

	Sex.				Trade or Occupation.											
					Farmers and Farm Labourers.			General Labourers.			Mechanics.			Clerks, Traders, etc.		
	M.	F.	C.	Totals.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.
Australian		2	2	4												
Chinese	33	17	28	78				4						22	16	27
Gt. Britain and Ireland:																
English	5	3		8	2											
Irish		1		1												
Scotch	3			3	2						1					
Hawaiian	1			1				1								
Hebrew, Russian	3			3	2											
Japanese	144	230	20	394	48	10		38	8		9	1		14	2	
New Zealand			2	2			2									
Russian	1			1												
Swiss	1			1	1											
U.S.A. Citizens		1		1												
Totals	191	254	52	497	55	10	2	43	8		10	1		36	18	27

TABLE V.—Nationality, Sex, Occupation and Destination of Immigrant arrivals for Canada, at the Port of Victoria, for the Fiscal Year ended March 31, 1916.—*Con.*

	TRADE OR OCCUPATION—*Con.*							DESTINATION.					
	Miners.			Female Servants.	Not Classified.			Quebec.	Ontario.	Manitoba.	Saskatchewan.	Alberta.	British Columbia
	M.	F.	C.		M.	F.	C.						
Australian						2	2						4
Chinese					7	1	1	15	7		3	3	50
Great Britain and Ireland:													
English				1	3	2		1				1	6
Irish						1			1				
Scotch								1					2
Hawaiian													1
Hebrew, Russian					1					3			
Japanese		1		6	35	202	20	1	2			6	385
New Zealand											2		
Russian					1					1			
Swiss													1
U.S.A. Citizens						1							1
Totals		1		7	47	209	23	18	10	4	5	10	450

UNITED STATES PORTS.

For the fiscal year 1915-16, there arrived in Canada, via ports in the United States, 8,942 passengers, of whom 3,055 travelled saloon and 5,887 steerage. Included in the steerage passengers were 3,356 returned Canadians and 113 tourists, leaving the immigration proper at 2,418 souls, a decrease at these ports, as compared with that of the preceding fiscal year of 11,622 persons.

Table I deals with the total arrivals of saloon passengers; table II with the total arrivals of steerage passengers; table III with the monthly arrivals of immigrants; and tables IV and V give summaries of the information obtained from immigrants upon arrival.

TABLE I.—Nationality and Sex of Saloon Passengers for Canada, arriving at Ports in the United States, for the Fiscal Year ended March 31, 1916.

	Males.	Females.	Children.	Totals.
Belgian	1	1	.....	2
Bermudian	10	7	.....	17
Cuban	5	1	1	7
Dutch	10	4	.....	14
French	9	7	.....	16
German	.....	1	.....	1
Great Britain and Ireland—				
English	116	80	21	217
Irish	7	4	.....	11
Scotch	19	12	2	33
Welsh	1	.....	.....	1
Greek	2	.....	.....	2
Hebrew, Russian	2	.....	.....	2
Italian	5	3	.....	8
Jamaican	15	18	2	35
Negro	12	19	3	34
Newfoundland	.....	.....	1	1
Russian	3	3	2	8
Scandinavian—				
Danish	1	1	.....	2
Norwegian	1	2	2	5
Swedish	2	2	.....	4
Spanish	6	3	.....	9
Swiss	2	3	.....	5
U. S. A. Citizens	5	8	.....	13
West Indian	30	17	.....	47
Returned Canadian	1,377	841	165	2,383
Tourist	128	37	13	178
Totals	1,769	1,074	212	3,055

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TABLE II.—Nationality and Sex of Steerage Passengers for Canada, via Ports in the United States, for the Fiscal Year ended March 31, 1916.

——	Males.	Females.	Children.	Totals.
African, South	.....	1	2	3
Australian	1	.....	.....	1
Austrian	2	4	2	8
Belgian	16	25	29	70
Brazilian	1	.....	.....	1
Bulgarian	1	.....	.....	1
Cuban	1	.....	.....	1
Dutch	29	33	26	88
French	43	56	13	112
German	5	12	9	26
Great Britain and Ireland—				
English	187	290	128	605
Irish	35	45	17	97
Scotch	43	80	17	140
Welsh	6	10	5	21
Greek	83	32	25	140
Hebrew—				
Hebrew, N.E.S.	3	5	1	9
" Austrian	1	.....	.....	1
" Russian	12	9	10	31
Hindoo	1	.....	.....	1
Italian	99	162	122	383
Jamaican	1	4	.....	5
Maltese	4	.....	.....	4
Negro	16	13	1	30
Newfoundland	.....	1	.....	1
Persian	.....	2	1	3
Polish—				
Polish, N.E.S.	.....	1	.....	1
" Russian	4	3	.....	7
Roumanian	.....	1	1	2
Russian—				
Russian, N.E.S.	2	3	2	7
Finnish	58	30	29	117
Scandinavian—				
Danish	61	33	14	108
Icelandic	5	2	.....	7
Norwegian	61	87	39	187
Swedish	36	58	44	138
Serbian	5	1	.....	6
Spanish	9	1	.....	10
Swiss	7	10	5	22
Syrian	1	.....	.....	1
U. S. A. Citizens	4	2	1	7
West Indian	6	6	4	16
Total immigration	849	1,022	547	2,418
Returned Canadian	2,247	759	350	3,356
Tourist	87	17	9	113
Totals	3,183	1,798	906	5,887

TABLE III.—Monthly arrivals of Immigrants for Canada, by Nationalities, via Ports in the United States, for the Fiscal Year ended March 31, 1916.

	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	Mar	Totals
African, South		3											3
Australian		1											1
Austrian	1	6										1	8
Belgian	9	10	1	3	6	1	1	11	27		1		70
Brazilian				1									1
Bulgarian		1											1
Cuban						1							1
Dutch	9	19	3	15	4	7		8	5	10	3	5	88
French	15	19	5	6	7	14	5	13	10	4	3	11	112
German	2	1		1		2		11	1		3	5	26
G. Britain and Ireland—													
English	118	38	42	*103	40	48	45	42	16	24	30	59	605
Irish	18	3	6	4	11	15	9	15	1	2		13	97
Scotch	15	13	11	5	3	10	23	6	9	6	18	21	140
Welsh	1		1	3	1	5			1	2		7	21
Greek	6	20	2	19	15	15	16	16	2	9	3	17	140
Hebrew—													
Hebrew, N.E.S.		2	1			3	1			2			9
" Austrian				1									1
" Russian	1		6	3		1	2	1	4			13	31
Hindoo		1											1
Italian	48	66	27	25	14	16	32	26	19	16	37	57	383
Jamaican			5										5
Maltese					1						1	2	4
Negro	4	7	2		4	5	2	3	1		2		30
Newfoundland		1											1
Persian										3			3
Polish—													
Polish, N.E.S.			1										1
" Russian		2				2					3		7
Roumanian					2								2
Russian—													
Russian, N.E.S.				1	1	1	2			2			7
Finnish	3	5	7	4	15	1	8	4	15	2	42	11	117
Scandinavian—													
Danish	1	19	10	9	13		14	12	4	1	7	18	108
Icelandic		4			3								7
Norwegian	37	14	23		30	4	11	11	3		11	43	187
Swedish	7	8	11	13	13	27	5	2	3	14	6	29	138
Serbian					3					1		2	6
Spanish			1		3				2		1	3	10
Swiss	4	4	5	1		1	3	3	1				22
Syrian								1					1
U.S.A. Citizens			1					2	2			2	7
West Indian	2	3					10						1
Totals	301	270	171	217	189	179	189	187	126	98	171	320	2,418

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TABLE IV.—Monthly arrivals of Immigrants for Canada, by Occupation and Destination, via Ports in the United States, for the Fiscal Year ended March 31, 1916.

	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	Mar	Totals
Agriculturists	65	32	26	33	24	19	17	22	16	5	36	65	360
General labourers	33	47	15	23	27	13	31	8	11	5	42	51	306
Mechanics	14	14	11	25	10	6	4	18	11	10	13	42	178
Clerks, traders, etc	16	20	7	9	5	7	14	9	1	8	11	13	120
Miners	3	1		1	1		4	2	2		8	1	23
Female servants	28	28	7	12	12	16	23	12	11	7	17	37	210
Not classified	142	128	105	114	110	118	96	116	74	63	44	111	1,221
Totals	301	270	171	217	189	179	189	187	126	98	171	320	2,418
Maritime Provinces	4	6	1	8	3	2	3	6	1	8	6		48
Quebec	63	59	29	37	29	22	34	40	30	14	16	50	423
Ontario	132	93	59	109	66	81	103	91	32	53	95	118	1,032
Manitoba	19	27	21	11	24	28	7	16	13	10	8	28	212
Saskatchewan	47	24	11	11	35	24	9	10	18	3	15	61	268
Alberta	17	22	31	27	16	7	18	10	25	4	14	53	244
British Columbia	19	39	19	12	16	15	15	14	7	6	17	10	189
Yukon Territory				2									2
Totals	301	270	171	217	189	179	189	187	126	98	171	320	2,418

TABLE V.—Nationality, Sex, Occupation and Destination of Immigrant Arrivals for Canada, via Ports in the United States, for the Fiscal Year ended March 31, 1916.

	Sex.				Trade or Occupation.											
					Farmers and Farm Labourers.			General Labourers.			Mechanics.			Clerks, Traders, etc.		
	M.	F.	C.	Totals.	M.	F.	C.	M.	F.	C.	M.	F.	C.	M.	F.	C.
African, South		1	2	3												
Australian	1			1												
Austrian	2	4	2	8								1				
Belgian	16	25	29	70	4	3	5	2								
Brazilian	1			1										1		
Bulgarian	1			1				1								
Cuban	1			1												
Dutch	29	33	26	88	12	2		3			2			2	2	
French	43	56	13	112	4	1		1			7	8	1	6	2	
German	5	12	9	26	1									1	1	
G. Britain and Ireland—																
English	187	290	128	605	30	15	14	9	3	3	28	17	3	31	10	8
Irish	35	45	17	97	9	1		1			4	1	1	4	8	
Scotch	43	80	17	140	6	3			1		11	7		4	4	2
Welsh	6	10	5	21		1		1			1	1	1			
Greek	83	32	25	140	7	1	5	68	7	8	3			2	1	
Hebrew—																
Hebrew, N.E.S.	3	5	1	9				1	1	1	1	1		1		
" Austrian	1			1												
" Russian	12	9	10	31	2	1	2	2			5	4	2			
Hindoo	1			1												
Italian	99	162	122	383	16	3	2	47	25	18	16	3	1	6	1	
Jamaican	1	4		5												
Maltese	4			4				2			1			1		
Negro	16	13	1	30				3			5	1		1		
Newfoundland		1		1												
Persian		2	1	3												
Polish—																
Polish, N.E.S.		1		1												
" Russian	4	3		7	2	1					1					
Roumanian		1	1	2												

Russian—																	
Russian, N.E.S.	2	3	2	7				1									
Finnish	58	30	29	117	15			34	9	10	5			2			
Scandinavian—																	
Danish	61	33	14	108	35	9	8	10			11	1	2	4	2		
Icelandic	5	2		7	1			1			1			1			
Norwegian	61	87	39	187	41	28	27	6	2		6	2		2	1		
Swedish	36	58	44	138	14	6	6	15	1	1	7	1			1		
Serbian	5	1		6				3									
Spanish	9	1		10				4			2	1		1			
Swiss	7	10	5	22	4	2	5	1						1	1		
Syrian	1			1							1						
U.S.A. Citizens	4	2	1	7	4		1										
West Indian	6	6	4	16	1									4	1		
Totals	849	1,022	547	2,418	208	77	75	216	49	41	118	49	11	75	35	10	

TABLE V.—Nationality, Sex, Occupation and Destination of Immigrant Arrivals for Canada, via Ports in the United States, for the Fiscal Year ended March 31, 1916.—*Con.*

	Trade or Occupation.							Destination.							
	Miners.			Female servants.	Not Classified.			Maritime Provinces.	Quebec.	Ontario.	Manitoba.	Saskatchewan.	Alberta	British Columbia.	Yukon Territory.
	M.	F.	C.		M.	F.	C.								
African, South						1	2							3	
Australian					1									1	
Austrian				2	2	1	2		6	1	1				
Belgian				2	10	20	24		30	8	10	14	8		
Brazilian									1						
Bulgarian										1					
Cuban					1					1					
Dutch				5	10	24	26	5	4	34	28	5	12		
French	1		1	6	24	39	11	1	67	14	10	9	2	8	1
German				1	3	10	9	3	4	10	1	8			
G. Britain and Ireland—															
English	3	2	3	41	86	202	97	10	71	335	41	47	39	61	1
Irish				5	17	30	16		11	49	12	4	9	12	
Scotch	2	1		12	20	52	15	1	17	82	7	15	11	7	
Welsh	1				3	8	4	2	2	12	1	2	1	1	
Greek				12	3	11	12		32	93	12			3	
Hebrew—															
Hebrew, N.E.S.						3			5		4				
" Austrian					1					1					
" Russian					3	4	6		17	3	8		1	2	
Hindoo					1				1						
Italian	3	3	2	25	11	102	99	17	79	218	9	1	21	38	
Jamaican					1	4				5					
Maltese									2	2					
Negro				9	7	3	1		19	11					
Newfoundland				1						1					
Persian						2	1			3					
Polish—															
Polish, N.E.S.						1			1						
" Russian					1	2				7					
Roumanian						1	1							2	

Russian—														
Russian, N.E.S.					1	3	2	1	4				2	
Finnish	1			9	1	12	19		1	88	7	9	5	7	
Scandinavian—														
Danish				16	1	5	4	3	8	5	19	13	52	8	
Icelandic				1	1	1					6	1			
Norwegian				32	6	22	12	3	14	8	14	99	38	11	
Swedish				27		22	37	1	10	20	21	35	34	17	
Serbian					2	1				4			2		
Spanish					2			1	6	1				2	
Swiss				3	1	4			2	7	1	3	6	3	
Syrian									1						
U.S.A. Citizens				1		1						3	3	1	
West Indian					1	5	4		8	8					
Totals	11	6	6	210	221	596	404	48	423	1,032	212	268	244	189	2

STATEMENT of Rejections, by Causes, at Ocean Ports, from December, 1902, to March 31, 1916.

	Fiscal Year.													
	1902-1903.	1903-1904.	1904-1905.	1905-1906.	9 months ended March 31, 1907.	1907-1908.	1908-1909.	1909-1910.	1910-1911.	1911-1912.	1912-1913.	1913-1914.	1914-1915.	1915-1916.	Totals.
Abscess									1	1	1	1	2		6
Accompanying patients	16		13	39	21	58	60	42	104	53	28	76	58	4	572
Acute iritis										1	1				2
Adenitis										1	1	2	11		15
Alcoholism				3	3	1	5	8	3	2	4	7			36
Anaemia						2				1	1	3			7
Ankylosis						2						1			3
Arterialsclerosis								1	14		2	2			19
Asthma										1					1
Avoiding inspection											10	12	2	1	25
Bad character			12			3									15
Barbers' itch											1	2	1		4
Beriberi											1				1
Blenorrhagia										1					1
Blepharitis									1						1
Blindness	1							2		2					5
Bronchitis						1							1		2
Cancer								1							1
Cataract			1	1	1	3	1			1	1		4		13
Cellulitis											1				1
Choroiditis						1	1								2
Chronic catarrh of stomach												1			1
Chronic inflammation											1	1			2
Chronic iritis												2			2
Cirrhosis							1								1
Conjunctivitis		1	4	2	4		1	3	13	3	18	11	2	1	63
Contract labour						23		33	28	3					87
Contravention of Order-in-Council								2	23						25
Convulsions								1							1
Corneal opacity						1	1				1	1			4
Criminality)			1	6	7	17	6	9	10	5	4	3	2	4	74
Crippled			2	5	3	3	1	2	1	1					18
Curvature of spine						2		4	2	2	3	3	2	1	19
Cystic thyroid											1				1
Deafness							1								1
Deaf and dumb				4	5	1		2		1	1	1	1	1	17
Defective sight				3	14	12	17	2	15	3	1	5	1		73
Deformity			1									1			2
Degeneracy					2										2
Delusions								1	2		1				4
Desertion									1					4	5
Diabetes					1										1
Diseased gland								4	5	1	4				14
Dislocations						1			2	2	3				8
Dropsy			1												1
Eczema			1												1
Emphysema							1								1
Empyema					1	1					1				3
Endocarditis												10	1		11
Epilepsy		9	2	5	3	4		4	8	5	7	2	1		50
Erysipelas						1									1
Exophthalmos													1		1
Favus	7	16	7	2	2	5	2	1	1	3		3	1		50
Fever										1					1
Fractures						1		1	1						3
General debility		1		2			2	12		3	1			1	22
Goitre				1				1	4	3	3	1	1		14
Gonorrhoea			1				1	1	1	2	3	1	2		12
Gout		1													1
Hare-lip							1								1
Head tax										6					6
Heart disease			3	2	2	6	5	5	8	5	13	22	11	3	85
Hemiplegia						1						1			2
Hernia			1		4	8	3	11	20	8	13	33	13		114
High temperature								2	5						7
Hip disease								1	1		1				3
Hookworm												1		2	3
Hydrocele									2		1		1		4

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STATEMENT of Rejections, by Causes, at Ocean Ports, from December, 1902, to March 31, 1916.—*Con.*

	Fiscal Year.													
	1902-1903.	1903-1904.	1904-1905.	1905-1906.	Nine months ended. March 31, 1907.	1907-1908.	1908-1909.	1909-1910.	1910-1911.	1911-1912.	1913-1913.	1913-1914.	1914-1915.	1915-9116.	Totals.
Hysteria							1	2	1		2				6
Idiocy			1	3		3		4	5			2			18
Illegitimacy									1						1
Imbecility						3	1	3		2	4	21	4		38
Immorality						3	10	12	22	35	16	15	31	30	4	178
Indirect passage								4	29	25	112	45	55	35	7	312
Inflammation of gland													1	2		3
Insanity		5	2	11		7	19	13	15	5	15	22	15	5	6	140
Keratitis			1							1		1	3			6
Lack of funds				1			85	67	34	1,038	246	204	994	452	38	3,159
Lameness										1	2		1			4
Laryngitis													1		1	2
Leprosy								1								1
Likely to become public charges		49	56	73		57	292	66	681	274	164	56	76	71	55	1,970
Locomotor ataxia			1				2	1		1	2	1				8
Lupus				1		4		1		1						7
Malaria										1						1
Melancholia			1			1						1	3	1		7
Mentally deficient	1		3	8		2	9	27	24	22	25	21	22	50	5	219
Muscular atrophy						1	3	2								6
Nephritis											1			1		2
Nervous disease						1				3				1		5
No passport						30	3	1	2		7		111	3	3	160
Not complying with regulations								2								2
Opium habit						2										2
Paralysis			1	8		2		1	2	2	2	4	2	1		25
Parotiditis							1									1
Partial blindness												8	1			9
Pediculosis										1						1
Pityriasis rubra										2						2
Pleurisy						1							1			2
Pneumonia		1								1						2
Polygamy									2	1						3
Poor physique	1			6		5	31	6	13	41	10	64	30	38		245
Pott's disease						1										1
Pregnancy						2	5	1		2	5	2	3	1		21
Presenility													1			1
Previously rejected										1	8	1				10
Procuring						1	2				6		2	2		13
Prostitution						8	18	1			4		2	1	1	35
Psoriasis								1	2	1	1	1	1	1		8
Ran away from home				1	5								4	2		6
Rheumatism			1	4	1											12
Rickets							1									1
Scabies								2	1							3
Sclerosis												1		1		2
Scoliosis												1				1
Senility		1		6	1	9	2	4	15	4	4	2	1			49
Skin disease									1		2					3
Spinal disease					1											1
Stowaway					42	148	74	74	85	86	63	67	23	8		670
Syeosis										1						1
Syphilis	1		2			2	1	1	5		2	8	6	3	3	34
Tinea				1			2	5				1		4		13
Trachoma	246	190	486	322		176	358	94	429	326	100	72	127	138	4	3,068
Tuberculosis			4	4		8	11	11	11	26	21	11	34	7	5	153
Tumor												1				1
Ulcers											5					5
Vagrancy												2				2
Varicose veins			1			1	1			13	3	3	1	1		24
Venereal disease			1									1			1	3
Weak stomach										1						1
Xerodemia											1					1
Totals	273	274	611	524	440	1,172	509	1,515	2,210	972	756	1,827	998	163		12,244

STATEMENT of Rejections, by Nationalities, at Ocean Ports, from December, 1902, to March 31, 1916.

	Fiscal Year.													
	1902-1903.	1903-1904.	1904-1905.	1905-1906.	Nine months ended March 31, 1907.	1907-1908.	1908-1909.	1909-1910.	1910-1911.	1911-1912.	1912-1913.	1913-1914.	1914-1915.	1915-1916.	Totals.
African, South										1		9			10
Albanian											2	9			11
Algerian											1				1
Australian			1			1	3	5	2	2				1	15
Austro-Hungarian—															
Austrian, N.E.S.	7	8	15	22	2	34	6	14	32	22	29	73	64	1	329
Bohemian						1	1		2	1					5
Bukowinian		3	7	13		4	8	17	9	3	6	37	26		133
Croatian				1		1	4	6	15	1		2	5		35
Dalmatian						1									1
Galician	30	18	58	42	6	11	16	43	38	25	13	145	62		507
Hungarian, N.E.S.	14	4	3	4		7	6	22	27	19	10	49	14		179
Magyar					2	1		1	10	2	1	2			19
Ruthenian			2	7	2	3	29	105	124	17	14	13	1		317
Slovak					3			4	1	1					9
Belgian			2	3		2	2	23	5	10	1	7	3		58
Bermudian											1	1			2
Bulgarian						176		50	162	74	11	223	52	1	749
Chinese			9	8	1	21	1	9	105	40	46	30	19	6	295
Corean				2											2
Dutch							2	1	7	6	1	1	2		20
French			2	4	6	12	18	24	22	13	8	17	10	4	140
German,—															
German, N.E.S.	13	6	10	10	5	33	20	29	72	22	17	23	13	1	274
Prussian			1												1
Great Britain and Ireland															
English	2	7	10	56	48	79	93	141	184	179	118	142	126	25	1,210
Irish			1	13	5	18	22	16	17	15	25	12	14	5	163
Scotch			2	5	7	30	31	25	26	28	17	16	26	12	225
Welsh		1		2	1	3		1	6	5	1	1	3		24
Greek	2		1	4	2	47	3	36	90	24	33	45	20	9	316
Hebrew—															
Hebrew, N.E.S			3	1	1	13	3		14	10		5	1		51
" Austrian			4			1	1	1	3	7	3	5	1		26
" Polish				1											1
" Roumanian													2		2
" Russian		1	108	33	33	38	32	72	139	56	39	87	33	1	672
Hindoo				18	120	218	4	6		2	8	21	92	2	491
Italian	6	8	69	57	29	65	33	169	404	174	173	341	140	3	1,671
Jamaican								1		3					4
Japanese			70	66	98	80	26	18	9	10	7	21	12	14	431
Macedonian											1	2		1	4
Maltese											1	6	1	1	9
Mexican										2					2
Negro				1		2									3
Newfoundland				1		3	3		5	1	2	7			22
Persian						2	1	2	18	3					26
Polish—															
Polish, N.E.S.	7	7	9	1	2	3	1			1		4	1		36
" Austrian			1		1	10	9	75	51	11	8	14	3		183
" German			5					1	2	2	1	1			12
" Russian		5	58	11	9	16	6	42	31	9	15	42	19		263
Roumanian		9	3	2	1	10	3	27	31	4	2	12	9		113
Russian—															
Russian, N.E.S.	149	130	41	75	24	62	87	82	86	65	66	246	121	8	1,242
Doukhobor										5					5
Finnish	16	3	10	11	4	8	8	45	19	11		15	3	3	156
Scandinavian															
Danish			3			2	1	15	9	9	1	1	1	1	43
Icelandic		1		1	4			1		1					8
Norwegian		3	5	9		4	5	11	20	15	5	1	1	4	83
Swedish	5	1	2	4	1	8	5	23	34	8	3	5	5		104
Serbian						1	1	5	6	5			3		21
Spanish						1	3	4	28	2	2	24	21	9	94
Swiss									5		1		4	5	15

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STATEMENT of Rejections, by Nationalities, at Ocean Ports, from December, 1902, to March 31, 1916.—*Concluded.*

	Fiscal Year.													
	1902-1903.	1903-1904.	1904-1905.	1905-1906.	Nine months, ended March 31, 1907.	1907-1908.	1908-1909.	1909-1910.	1910-1911.	1911-1912.	1912-1913.	1913-1914.	1914-1915.	1915-1916.	Totals.
Turkish															
Turkish, N. E.S.	3	1	2	5	3	10	3	107	147	13	11	42	6	5	358
Arabian	7			1			1		6		1				16
Armenian	4	18	11	11	2	45	2	132	60	7	5	21	2		320
Syrian	8	40	56	2		21	4	87	101	18	21	18	5		381
U.S.A. Citizens			27	17	17	63	2	13	20	2	14	12	29	28	244
West Indian					1	1		4	4	8	11	17	23	13	82
Totals	273	274	611	524	440	1,172	509	1,515	2,210	972	756	1,827	998	163	12,244

STATEMENT of Deportations, after having been Admitted, by Causes, from December, 1902, to March 31, 1916.

	Fiscal Year.														
	1902-1903.	1903-1904.	1904-1905.	1905-1906.	Nine months, ended March 31, 1907.	1907-1908.	1908-1909.	1909. 1910.	1910-1911.	1911-1912.	1912-1913.	1913-1914.	1914-1915.	1915-1916.	Totals.
Abscess					2	1	2	2	2	3		7			19
Accompanying patients	4	3	1	4	35	26	21		18	17	16	10	34	5	194
Alcoholism					2	2	27		9	5	5	6	6	4	66
Anaemia							1				2	2	3		8
Arteritis cerebral									1						1
Arthritis												3	6	2	11
Asthma		1							2	1	3	9	4	5	25
Bad character							7	9		3					19
Beriberi													1		1
Blindness				1		2	3			2		1	1	3	13
Bright's disease						2	3				3	3			11
Bronchitis		1	1			3	1				1	7	5	2	21
Cancer		1		1			2		1	2	2	3	1		13
Cataract						1	1								2
Catarrh									1						1
Cellulitis												1			1
Chronic dysentery	1	2	1	1	1								1		7
Chronic skin disease										1		1			1
Colitis												1			1
Criminality		1	8	1	12	68	115	130	172	242	334	376	404	329	2,192
Crippled		4	4	8	4	4	11			2		1			38
Curvature of spine						3	1					1	2		7
Cystitis	1	1		1	2	1	1	1					2		10
Deafness						2	4							1	7
Defective sight		1	1	6	4	5	11					2	2		32
Diabetes					1		2					1		2	6
Diseased leg											1				1
Dislocations	2					1									3
Drug habit						1						1		3	5
Eczema							1	6			1	1			9
Endocarditis												12	2	1	15
Epilepsy	6	4	2	6	6	15	22	8	10	10	8	19	13	12	141
Erysipelas												2			2
Fistula						1	1								2
General debility	7	8	7	18		60	97	27	1	1					226
Haemoptysis	1	1													2
Heart disease	2	1	3	7	3	5	13	4	3	3	9	17	7	12	89
Hemiplegia											1	1	1		3
Hemorrhage												1	1		2
Hemorrhoids	1											1			2
Hernia			2	3			8		2	1		2	5	3	26
Hip disease							1				1				2
Idiocy	1		4					2							7
Imbecility		1	1	1	2	2	35	1						2	45
Immorality										24	38	38	39	14	153
Injured						7	6	1							14
Insanity	1	5	5	12	53	110	113	95	121	133	220	207	144	62	1,281
Insomnia		1				1		1							3
Iritis													1	1	2
Jaundice												2			2
Keratitis												1	2	1	4
Kidney disease							1			2					3
Laryngitis												1			1
Leprosy											3		1	3	7
Locomotor ataxia													3	3	6
Malaria						1		2							3
Melancholia											1	3			4
Mental weakness	7	8	2	17	20	43	1	9	17	9	10	15	10	4	172
Muscular atrophy				1				2							3
Necrosis													1	1	2
Nephritis											1	4	1	1	7
Neurasthenia	1		1						1	1	2	4	9	3	22
Neuritis												6			6
Neurosis													1		1
Nostalgia							1		1						2

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STATEMENT of Deportations, after having been admitted, by Causes, from December, 1902, to March 31, 1916.—*Concluded.*

	Fiscal Year.													
	1902-1903.	1903-1904.	1904-1905.	1905-1906.	Nine months, ended March 31, 1907.	1907-1908.	1908-1909.	1909-1910.	1910-1911.	1911-1912.	1912-1913.	1913-1914.	1914-1915.	1915-1916.	Totals.
Ostearthritis											1				1
Paralysis		3	1	7		5	5	3	2	1	6	9	6	1	49
Paresis of arm														1	1
Pediculosis												1			1
Peritonitis													1		1
Phlebitis												1			1
Pleurisy	1	1										2	1	1	6
Poisoning (lead)						1									1
Poor physique											9	8	1		18
Pott's disease							2						1		3
Pregnancy						1		3	2	2		5		2	15
Procuring											5	3	1		9
Prostitution		1		2		8	8	6	10	9	15	20	11	7	97
Public charges	14	19	19	18	28	309	1,074	348	289	343	392	715	789	635	4,992
Rheumatism	8	7	6	11	10	29	15	8	2	7	12	42	27	17	201
Salpingitis												1			1
Sclerosis			1								1	1	2	1	6
Senility						8	10	3	1				1	1	24
Septicaemia														1	1
Tonsilitis													1	1	2
Trachoma			2			1	1	2	8		1	2	2		19
Tuberculosis	8	8	13	6	13	67	54	30	33	39	61	139	82	47	600
Ulcers											3	1	2	1	7
Urethritis												1			1
Vagrancy				2		21	56	29	61	84	107	97	77	44	578
Varicose veins	1	1		3	2	5	6			2	1	2	6	1	30
Venereal disease		1	1			4	4	2	2	2	1	8	10	3	38
Violation of Immigration Act									12	8	4	4			28
Totals	67	85	86	137	201	825	1,748	734	784	959	1,281	1,834	1,734	1,243	11,718

STATEMENT of Deportations, after having been admitted, by Nationalities, from December, 1902, to March 31, 1916.

	Fiscal Year.													
	1902-1903.	1903-1904.	1904-1905.	1905-1906.	Nine months, ended March 31, 1907.	1907. 1908.	1908. 1909.	1909-1910.	1910-1911.	1911-1912.	1912-1913.	1913-1914.	1914-1915.	1915-1916.	Totals.
African, South							1			1					2
Argentinian														1	1
Australian						1	1	4	1		2	2	1	4	16
Austro-Hungarian—															
Austrian, N.S.		1				4	17	4	10	21	30	110	59		256
Bohemian							3	1		1	2				7
Bukowinian			1			5	4		3	1	1	1	1		17
Croatian												1			1
Galician	1		1	4	4	15	16	11	10	6	9	14	15		106
Hungarian, N.S.				1	1	3	1				5	6			17
Ruthenian							1	6	5	11	7	35	16		81
Slovak									1						1
Belgian				1	2		2	8	6	6	4	3	7	5	44
Bulgarian						65	74				2	1	3	1	146
Chinese			1			1	1	1	2	6	16	18	33	27	107
Dutch						10	12	3	2	1	13	5	8	4	58
French			1	1	3	4	18	11	12	22	26	24	9	4	135
German		1			1	8	7	17	10	6	25	38	13	1	127
Great Britain and Ireland															
English	43	58	61	98	130	513	1,081	355	342	406	387	693	699	473	5,339
Irish		2	2	3	10	31	34	37	23	41	47	65	48	38	381
Scotch	7	8	9	8	26	61	119	89	90	89	118	154	119	79	1,006
Welsh		1	2	3	2	2	1	5	3	4	7	10	11	12	63
Greek							32	2	11	2	2	2	5	2	58
Hebrew															
Hebrew, N.E.S.			1	8	2	2	32	2	3		5				55
" Austrian							2		1		5	3	2		13
" Dutch												1			1
" German												2			2
" Polish						1		1			1				3
" Roumanian												4			4
" Russian				1	2	6	11	1	5	2	5	32	16		81
Hindoo							24	1	1	2	1		2	4	35
Italian	1	4	1		1	13	13	15	13	12	17	35	66	75	266
Jamaican				1			1								2
Japanese							4	1	1	1		1	3	9	20
Maltese											1	4	2	1	8
Montenegrin											2				2
Negro						1	1						1		2
Newfoundland								8		3	5	1	2	1	20
New Zealand											1		1	1	3
Polish															
Polish, N.E.S				1	1	8		2	3	1	8	5	7	1	37
" Austrian									1	6	2	2	2		13
" German								1							1
" Russian						1	3	1	1	1	12	4	2		25
Portuguese													1		1
Roumanian	1	1				2	42	3	2	4	4	5	3		67
Russian															
Russian, N.E.S.					1	9	49	5	5	16	29	54	27	11	206
Finnish		4	1			2	3	4	4	3	14	11	5	1	52
Scandinavian—															
Danish		2	2	2	1	6	4	2	3	2	5	2	7		38
Icelandic	3			1				1				1		1	7
Norwegian	8	2	1	1	1	4	2	3	12	5	21	13	10	17	100
Swedish	3	1	2	1	4	9	7	6	8	12	20	10	11	9	103
Serbian									7		1	1	2		11
Spanish							1			2	1		3	6	13
Swiss							2	2	1	1	12	3	6	2	29
Turkish—															
Turkish, N.E.S.							20			1	2	1			24
Armenian										1	1	1		1	4
Syrian						1	1	1	7	1					11
U.S.A.Citizens				2	8	37	98	119	169	256	377	405	461	437	2,369
Venezuelan												2			2
West Indian							3	1	6	3	26	19	46	15	119
Totals	67	85	86	137	201	825	1,748	734	784	959	1,281	1,834	1,734	1,243	11,718

SESSIONAL PAPER No. 25

STATEMENT of Deportations, after having been admitted, by Provinces, from December, 1902, to March 31, 1916.

	Fiscal Year.													
	1902–1903.	1903–1904.	1904–1905.	1905–1906.	Nine months ended Mar. 31, 1907.	1907–1908.	1908–1909.	1909–1910.	1910–1911.	1911–1912.	1912–1913.	1913–1914.	1914–1915.	1915–1916.	Totals.
Maritime Provinces		2		3	2	14	19	24	25	13	45	45	55	48	295
Quebec	18	16	11	27	41	136	684	97	165	186	208	371	397	236	2,593
Ontario	3	3	8	19	79	383	907	378	349	348	419	574	543	461	4,474
Manitoba					66	226	48	97	121	174	230	334	199	143	
Saskatchewan	46	64	67	88	3	19	27	19	23	35	44	59	85	96	3,201
Alberta					4	24	14	63	55	95	131	164	224	114	
Brit. Columbia					5	23	49	56	46	108	204	287	228	145	1,151
Yukon Terr'y					1								3		4
Totals	67	85	86	137	201	825	1,748	734	784	959	1,281	1,834	1,734	1,243	11,718

The following is a statement showing immigration literature, etc., ordered during the year 1915-16:—

Atlas of Canada	90,000
Canada West	531,700
5,000 Facts about Canada	300
Descriptive Notes, Early History of Canada	1,000
Calendar—1916	55,650
Immigration Facts and Figures	4,000
Maps.	
Small Map of Canada	10,000
Newspapers.	
The Danebrog—Danish	12,000
Der Norwestern—German	52,000
Heémskringla—Icelandic	78,000

During the year 236,535 pieces of mail were received and attended to. The outgoing letters and telegrams for the year numbered 112,054.

Your obedient servant,

W. D. SCOTT,
Superintendent of Immigration.

This report refers to Chinese immigration for the fiscal year ended March 31, 1916.

During the fiscal year just closed, 89 persons of Chinese origin have been admitted into Canada, of whom 69 were admitted as exempt from head tax, and 20 upon the payment of $500 each. For the purpose of comparison it is considered advisable to publish statistics relating to Chinese immigration since the imposition of the first head tax in 1885, which head tax was increased to $100 on January 1, 1901, and to $500 on January 1, 1904.

Fiscal Years.	Exempts.	Paying Tax.	Percentage of total arrivals admitted exempt.	Registered for Leave.	Total Revenue.
					$ cts.
1886	1	211	0·47	829	11,693 00
1887	.....	124	.....	734	7,424 50
1888	.....	290	.....	868	15,694 50
1889	112	782	12·53	1,322	40,808 00
1890	97	1,069	8·32	1,671	56,258 00
1891	12	2,114	0·56	1,617	107,785 50
1892	6	3,276	0·18	2,168	166,502 50
1893	14	2,244	0·62	1,277	113,491 00
1894	22	2,087	1·04	666	105,021 50
1895	22	1,440	1·50	473	72,475 00
1896	24	1,762	1·34	697	88,800 50
1897	24	2,447	0·97	768	123,119 50
1898	17	2,175	0·78	802	109,754 00
1899	17	4,385	0·39	859	220,309 50
1900	26	4,231	0·61	1,102	215,102 00
1901	26	2,518	1·02	1,204	178,704 00
1902	62	3,525	1·73	1,922	364,972 00
1903	84	5,245	1·58	2,044	526,744 00
1904	128	4,719	2·64	1,920	474,420 00
1904–5	69	8	89·61	2,080	6,080 00
1905–6	146	22	86·90	2,421	13,521 00
1906–7	200	91	68·73	2,594	48,094 00
1907–8	752	1,482	33·66	3,535	746,535 00
1908–9	695	1,411	33·00	3,731	713,131 00
1909–10	688	1,614	29·89	4,002	813,003 00
1910–11	805	4,515	15·13	3,956	2,262,056 00
1911–12	498	6,083	7·56	4,322	3,049,722 00
1912–13	367	7,078	4·93	3,742	3,549,242 00
1913–14	238	5,274	4·32	3,450	2,644,593 00
1914–15	103	1,155	8·19	4,373	588,124 00
1915–16	69	20	77·53	4,064	19,389 00
	5,324	73,397	6·76	65,213	17,452,569 00

The marked decrease in Chinese immigration during 1915-16 as compared with former years is on account of the Order in Council prohibiting the arrival at British Columbia ports of artisans or labourers, skilled or unskilled. The twenty admitted during 1915-16, upon payment of head tax, were boys coming to Canada to attend our public schools, and the exempt admissions were Chinese merchants and their families.

Since the outbreak of war there has been a considerable diminution in the number of Chinese in Canada, as of the large number who have gone on visits to China comparatively few have as yet returned to the Dominion.

W. D. SCOTT,

Chief Controller of Chinese Immigration.

SESSIONAL PAPER No. 25

REPORT OF OFFICE OF THE HIGH COMMISSIONER.

Herewith are the following emigration reports: Mr. J. Obed Smith, 11 and 12 Charing Cross, London; Mr. A. F. Jury, 48 Lord street, Liverpool; Mr. L. Burnett, 6 Parliament street, York; Miss M. Burman (in charge), 138 Corporation street, Birmingham; Mr. G. M. Holmes (in charge), 54 Castle street, Carlisle; Miss E. M. Whitsed (in charge), Market Place, Peterborough; Mr. J. Cardale, 81 Queen street, Exeter; Mr. J. K. Millar, 107 Hope street, Glasgow; Mr. G. G. Archibald, 116 Union street, Aberdeen; Mr. E. O'Kelly, 44 Dawson street, Dublin; Mr. J. Webster, 17 Victoria street, Belfast; Major S. W. Pugh, 28 High street, Cardiff.

Since the beginning of this year the Board of Trade has ceased to publish their emigration returns, and I am therefore unable to give the usual comparative statement. It is to be regretted that the sequence is thus broken, but an endeavour will be made to furnish the figures at a later date, as they provide the only record of the movement into and out of the United Kingdom, and are valuable if from that point of view alone.

Emigration propaganda has been suspended during the year owing to the war, but the circulation of the weekly news cablegram from your department has been continued, and it has been appreciated perhaps more than ever as the ordinary news services have been so much engaged with other matters.

I have the honour to be, sir,

Your obedient servant,

W. L. GRIFFITH,
Official Secretary.

The following report concerns the work of the Emigration Branch of the Department of the Interior, covering all agencies of the British Isles and Copenhagen, for the year ending March 31, 1916.

The agencies of the department in Antwerp and Paris have not been re-opened since they were closed before the preceding annual report, and the office at Copenhagen has been closed as and from the 31st January, 1916.

Owing to the continuance of the great war there has been no active propaganda carried on on the continent of Europe, looking to emigration therefrom to Canada, though we receive inquiries from time to time from countries therein, with whom communication through the post office is still available.

The number of male members of our staff, in Europe, of military age and over, who volunteered their services in connection with the military forces of the Empire, has been increased by the addition of juniors coming of age, and several others whose physical unfitness has been improved sufficiently to warrant their joining with His Majesty's forces. At the present moment there is no male member of our staff over 16 and under 43 years of age who is not in the military service to-day. Consequently, the Compulsory Military Service Act, passed by the British Parliament, has been entirely inoperative so far as this branch of the public service is concerned. These statements speak for themselves, and I must in fairness, add that all other members of the staff (including the ladies) are assisting in civilian forces or otherwise.

We have continued the policy of declining to advise or recommend any men of military age to apply for admission to Canada, and we are not conscious of having assisted any one thus to escape his obvious duty to the Empire. Nevertheless, those above military age, and females, have been advised and encouraged in proper cases. This accounts for a continuance—though in a much diminished degree—of the emigration movement, which, at the termination of the war, is likely once again to be of supreme importance to our Dominion.

There has been such a marked depreciation in the number of agricultural workers, through enlistment for military purposes, that it becomes all the more necessary to consider the advisability of utilizing, in the future, possible fields of operation among those classes, who, though living in towns and cities, have had some country experience, and give evidence of the farming instinct.

With the approach of spring this year, and the apparent need for more labour on the land in Canada, it is hoped that a fair number of suitable men above military age will seek engagement overseas, but military service and munition works, together with the necessitous operations based upon such, have so increased the wages to be earned here, that for the time being an active movement of people from here to Canada is hardly possible. Yet the underlying sentiment of feeling among workers is that on the cessation of the war a change in this respect would be sudden and very marked, hence the necessity for keeping Canada well before the public in the British Isles.

All inquiries coming through our various offices regarding Canada are given special attention, and the inquirers are encouraged to pursue the matter further at a later date, when conditions permit of a more ready emigration movement. I need not re-state the opinions expressed in my previous report as to the need for full and exhaustive consideration on the question of emigration from Europe. even before hostilities cease, and I welcome the fact that the Dominion Development and Economic Commission, appointed by the Canadian Government, has already been able to give some consideration to this important matter.

The number of agricultural exhibitions and shows held during the past year was much below normal, and having in view the economy directed by the Honourable the Minister, I have only engaged space and taken part in such of these shows as were likely to produce some lasting effect at very small expense.

The distribution of the Atlas of Canada amongst school children has been continued; the demand is still large, and we have supplemented that policy of education, and when emigration is not possible, by giving the school children a lecture by one of the agents of the department on "Canada's Place in the War," with suitable lantern slides, and while nothing has geen suggested regarding emigration in these 155 lectures, they, at least, help to draw the young mind to a realization of the possibilities and greatness of the British Empire.

The policy of some years' standing, of issuing news items of general and special interest regarding Canada to several hundred newspapers and magazines each week, has been continued, and I am glad to be able to report that Canada, through her brave soldiers' exploits, and through the generosity of editors concerning our news items, has been kept well to the front in public notice. I cordially agree with any suggestion that will prevent Canada and our emigration propaganda being sidetracked or relegated to oblivion.

No matter whether the applicant be of British birth or of alien birth, we have consistently carried out the policy laid down by the Honourable the Minister, that all those of military age, and physically fit, should take their share in the defence of the Empire, and all such have been refused any assistance towards entering Canada.

Through the various offices of the department on this side of the Atlantic, we have distributed, during the past year, 392,933 pieces of literature, 53,900 calendars, 9,264 wall maps, and 97,364 school atlases of Canada.

The sailings of steamers from the British Isles to Canada still continue at the minimum on account of Admiralty requirements for war and public purposes, but there has been no lack of accommodation for such persons as were suitable for settlement in Canada, and were not required in the defence of the Empire.

No change has been made in the regulations in respect to the admission of persons financially assisted by charitable institutions or public funds. We have not encouraged the emigration of such, and only seventy-five persons received cards of admission under such regulations during the past year.

The number of children sent out to Canada by Children's Emigration Societies to their Receiving Homes in our Dominion has been much smaller than previous years, but no restriction has been placed upon the emigration of this class.

The inspection of accommodation on steamers, carrying emigrants to Canada, has not often been made by our agents, because so few were passengers on the same, but we have received no complaints regarding the provision for comfort and safety which the various steamship lines still continue to provide for all their passengers.

Again I place on record, with special pleasure, the fact that we have received most hearty co-operation in our work from the British Government's Emigrants' Information Office, the Local Government Board, the Board of Trade, and other Imperial departments, and the complete agreement between our offices and those of the Provincial Governments of Canada, and the transportation companies, has continued to be a pleasing feature of the year's business.

During the year we received eighty-five cases of grains and grasses, forty-six cases of threshed grain, with a supply of apples sufficient for the reduced number of exhibitions, and the making of effective displays in our various shop windows. The freight charges have been very much increased, owing to the circumstances of the Great War; nevertheless, it has been money well spent.

During last year, 8,497 persons called at Charing Cross office, in London, to make inquiries regarding emigration, and over 9,000 more called for a copy of the Canadian Atlas. Several thousand Canadian soldiers have, for one reason or another, desired and received assistance of our officers in all parts of the British Isles.

The official files of the London office were increased during the year by 55,490 attachments, and 13,576 parcels of literature were sent from this office during the same period.

At the date of this report, our department has no emigration agency on the continent of Europe, outside the British Isles.

It seems advisable to collect opinions, in writing, from settlers in Canada, for use in our propaganda as soon as the war is over. "Prosperity Follows Settlement in Canada" is the title of one of our pamphlets, and we ought to be able to prove it up-to-date.

I refer again, with special pleasure, to the importance and activity of the Dominion Development and Economic Commission considering immigration into Canada and settlement after the war. The question has become one of prime importance, and may easily prove the best investment Canada can make. In this connection there has recently been brought to the front the question of the settlement of ex-service men on the land in Canada. The province of New Brunswick has already agreed to act as custodian of the commutation moneys, and to look after ex-service men arriving in their province. The question of extending this movement has already been brought to the attention of the Imperial Government, and no doubt will form the subject of conversation between the Governments concerned.

It is a noteworthy fact that the organization of our propaganda, under the Honourable the minister, has enabled us to put on the brakes when occasion needed, as well as to accelerate the movement from time to time.

The exceptionally good crop in Canada from the harvest of 1915 has produced a very favourable effect in the minds of the people in the British Isles, but whether such success will attend future operations, or not, it is supremely essential for the success of our propaganda that we should continue to be able to prove that farming pays in Canada.

During the year I have again attempted to induce the British Board of Trade to change their system of tabulating emigration returns, but without success. They have been in the habit of calling all those "emigrants" who state they have been residing in the British Isles for a year, regardless of whether they are tourists, returning Canadians, or others. The statistics obtained by our own department only include those who arrive in Canada for the first time, which is the real immigra-

tion into Canada, whereas the Board of Trade figures include "passengers of all classes" from the British Isles, and all of which they call "emigrants." The British Board of Trade claims that the tables compiled by their Director of Statistics are required for other purposes than emigration, and they could not see their way to making a change which would bring their figures into agreement with ours. Therefore, the British Board of Trade returns regarding "emigrants," presented from month to month and year after year, continue to be useless and misleading, so far as being of value for record or comparison, and they do not even approximately indicate the emigration movement from the British Isles to Canada.

This is abundantly proved by the fact that during the fiscal year 1914-15 the official figures of our department showed 43,276 persons from the British Isles arrived in Canada as "immigrants," while the British Board of Trade figures for the same period gave 65,269 persons as "emigrants" to Canada.

It becomes my duty to make this statement because if the British Board of Trade figures were accepted it would give our department credit for arrivals far in excess of what we claim, and we should be obliged some time to explain the disappearance of many thousands of "emigrants" between the time they leave the shores of the British Isles and the time they arrive off Canada as "immigrants." For the purpose, therefore, of checking the emigration movement to Canada, the monthly returns of the British Board of Trade have no value.

During the year we succeeded in placing 233 deported persons with their friends or in suitable institutions here.

All emigrants, as well as other persons, desiring to leave the British Isles have been obliged to seek an official passport before embarking on the steamer. This, with other duties analogous to war conditions, has kept our much attenuated staffs fully occupied.

J. OBED SMITH,
Assistant Superintendent of Emigration.

In submitting my annual report for the fiscal year 1915-16, I shall not attempt to give anything statistical, as any figures that might be of interest are doubtless embodied in the general report.

The work during the past year in the United States has been beset, as in the two previous years, with a number of conditions that have made the procuring of settlers much more difficult than hitherto. From time to time you have been advised of these, and I feel satisfied that the department fully appreciates the task of our different agents. But it is only fair to them, in view of the fact that they have not met with the degree of success they expected, that some of the reasons should be set out, although one may be charged with repeating what seems to be pretty well known.

In the first stages of the war there was an immediate falling-off in immigration from the United States. Nothing was more natural. Apart from the stories of conscription, war tax on land, the arrest of foreigners on Canadian soil, and the tales of hanging and shooting those of German and Austrian birth, which were given wide publicity by a sensational press, fed by romance dealers and interested landholders, there was the reasonable timidity in leaving a peaceful home for a country that they felt was in the midst of war. But I am pleased to say a great deal of this has been overcome, and the success that we have met with, as the records will show, in securing a larger number of settlers than in 1914-15, is cause for congratulation. To accomplish this, however, it required a lot of work on the part of the agents, on whose behalf I wish to thank the department for the appreciation shown, the help and the consideration given. It would take pages to tell of the many stories circulated, and which had to be met by our canvassers, who were supplied by the department at the earliest moment with the information to offset the lies that

were intended to do the country so much harm. One thing about these reports was the effect that they had when their falseness was shown. An illustration or two might not be uninteresting. But before relating them I wish to add that the tracing of the reports, the locating their author, and securing the information leading to a successful denial, entail no small amount of work on the part of the agents, but also on the part of the officials in Western Canada and the department at Ottawa. There was sent broadcast from a small station in Iowa the report that a Saskatchewan farmer had been shot for treason, and his son was to be shot in a couple of days. As these men were former residents of this small Iowa town, and well known, there was a great deal of local interest. Three days after the report was circulated the Saskatchewan farmer and his son were interviewed on their Saskatchewan farm as they were quietly pursuing their farm work. Their surprise and indignation can well be imagined. When the Iowa people learned of the true situation they also were indignant at the story-mongers, and as a result we will move several farmers from that district. Another result is that there are now very few who will believe any of the false tales that were once so widely spread, and even the press of the country is now asking for corroborative evidence before publishing anything of a derogatory character.



Bumper Grain Crops

Good Markets — High Prices

Prizes Awarded to Western Canada for Wheat, Oats, Barley, Alfalfa and Grasses

The winnings of Western Canada at the Soil Products Exposition at Denver were easily made. The list comprised Wheat, Oats, Barley and Grasses, the most important being the prizes for Wheat and Oats and sweep stake on Alfalfa.

No less important than the splendid quality of Western Canada's wheat and other grains, is the excellence of the cattle fed and fattened on the grasses of that country. A recent shipment of cattle to Chicago topped the market in that city for quality and price.

Western Canada produced in 1915 one-third as much wheat as all of the United States, or over 300,000,000 bushels.

Canada in proportion to population has a greater exportable surplus of wheat this year than any country in the world, and at present prices you can figure out the revenue for the producer. In Western Canada you will find good markets, splendid schools, exceptional social conditions, perfect climate, and other great attractions. **There is no war tax on land and no conscription.**

Send for illustrated pamphlet and ask for reduced railway rates, information as to best locations, etc. Address

Canadian Government Agent.

So many have gone to Canada since the war, some against the advice of their friends, and have done so well, with no trouble crossing the border, sending back reports to their relatives and others, that I feel safe in saying that in a very short time there will be but little more consideration given to going to Canada than in moving from one state to the other.

We have used a great deal of effort in giving publicity to the reports obtained from such settlers.

During the year the matter of publicity has had a great deal of attention. The advertising propaganda has been more extensive than ever, only such publications being used as it was felt would secure results amongst the class of people we were desirous to obtain. These comprised the largest and best farm papers in the United States and the county papers having a rural circulation. In all, space was taken in over 5,000 papers. The accompanying advertisement is one of a series of three that was used.

These deal almost wholly with the crop conditions in 1915 and also referred to there being no conscription nor any war tax on land, two of the most important matters to which we had to give attention. Reading notices appeared from time to time relating to conditions financial, agricultural, and domestic. An effective influence in our work during the past year tending to offset the stories that were being circulated was the official statements of the Hon. Dr. Roche, Minister of the Interior, which were given widest publicity in both city and country papers.

Exhibits of the grains and grasses collected on the farms of Western Canada, and prepared in a neat and attractive manner, the work of the staff at Winnipeg, were installed at many of the state fairs in the States, and also at the county fairs. At these fairs literature descriptive of the country was handed out by those in charge, either by the agent of the territory in which the exhibit was made, or by a competent assistant. It was found that some of the State Fair boards objected to having foreign exhibits, and of course from these we were barred, but in most of the states we were able to install these splendid exhibits, showing the grains, grasses, as well as vegetables and dairy products. As usual, they received marked and appreciative attention, and I am so satisfied that this kind of work is beneficial, that I have no hesitation in recommending its continuance.

The Canadian Government exhibit installed by the Department of Agriculture at the San Francisco exhibition was receiving such widespread publicity on account of its excellence in every way, that the department decided to take advantage of it, and sent Mr. Gilbert Roche to take charge of the Immigration section. For a time he was ably assisted by Mr. Sydney Thomas. I paid a visit to the exhibition during the year and found that the step taken by the department was a wise one. The interest in it was keen, and, to such an extent did results follow (we getting a large number of people), that I recommended that on its removal to San Diego the work should be continued under the same management. In addition to this I fully recommend the continuance of the agency in California. The reasons for people moving to Canada from this state are many, and needless to enumerate here, but they exist.

Some time ago I suggested the extension of our work in the Eastern States. At the time it was not apparent that immediate results would follow, but it was felt that the Middle Western and Western States had furnished so liberally of its excellent people, that we might, with a period of education, secure some of the manhood from the same stock that had made the above-mentioned states what they are to-day. The suggestion was adopted by the department, and I am glad to say that the work is progressing, and that from Virginia, North Carolina, the New England States, New York and Pennsylvania and New Jersey, we are getting as capable and desirable a class of settlers as ever went to any country.

The past year the results over the entire territory were considerably better than during the one previous, but still not as good as we would have liked to have seen, but I want to assure you, sir, that it has been through no fault of the department or any of the agents in the field. All have worked hard to the one desired end. The conditions that had to be overcome in the work are well known to you, and already outlined. In addition to those spoken of, though, I might add the embargo that was wisely placed upon the movement of cattle and horses on account of the foot-and-mouth disease for a good portion of the year from many of the states, and from Illinois in the matter of cattle, during the entire year. This prevented a good many from moving who will do so as soon as this embargo is released.

Another factor is the scarcity of homesteads within close reach of railways. There was a time when the settler selected his station, and, in an hour or two, his homestead. That day is past. The homestead area now is largely confined to the districts lying north of the Canadian Northern railway. While these are excellent lands, they do not offer at present the desirability to the settler from the open plains of the Middle West States that the others did. The day is not far distant, however,

when the advantages that they possess over the open plains area as a mixed-farming proposition, will be fully appreciated. We are now educating the prospective settler to this view, and as mixed farming increases in popularity, as it is now doing, so will the percentage of homesteaders on these lands increase.

The correspondence at the various offices shows that considerable interest is being taken in the Peace River district. In fact a large number of settlers have already gone into that part, and the reports sent back are of the most encouraging kind. With the completion of the railway lines to a considerable distance into the country, cheaper rates of transportation are available, and the remote districts of a year or two ago can now be easily reached.

A considerable number of the inquiries, both by letter and person, ask as to the prices of farm lands outside of the homestead area. Many of these are for improved farms. These the agents endeavour to answer in the best possible way, giving the inquirer such information as he possesses, or putting him in touch with those who may have what he wants. There has been a greater number of sales than during the last year. They are increasing, and I look with great confidence to the coming year being far better in this respect than the one just closed, thereby drawing a class of settlers with more capital than the ordinary homesteader possesses.

An important event in the history of the work was the convention of agents held at Chicago in January of this year. Nearly every agent in the service was present. The sessions were interesting and instructive. The addresses of Hon. Dr. Roche, Minister of the Interior, Hon. Walter Scott, Premier of Saskatchewan, Hon. Crawford Norris, Premier of Manitoba, and that of Mr. Daly, representative of Alberta, were excellent in every way and filled with information that the agents could readily absorb. The encouragement that the agents received in their personal recognition by these gentlemen was such as sent them to their homes feeling they were parties to a work of the highest national character.

In conclusion, I wish to add that there is every reason to look for a large increase in immigration to Canada from the United States during the coming year. I do not anticipate that there will be a marked increase in those who will take up homesteads, although the opening up of the Peace River tract may invite such a number as will exceed what might otherwise be estimated. The number of buyers will be in excess of any year for some time past, but it will be nothing in comparison to that which will be witnessed at the close of the war.

W. J. WHITE,

Inspector of U. S. Agencies.

The immigration from the British Isles shows a marked decrease even compared with the year 1914-15, due almost entirely to the war. The people who came were of a desirable class, a large proportion of them being the wives and children of those who had already established themselves in this country.

The number of settlers from the United States who entered Canada at western ports of entry shows a decrease of about 50 per cent as compared with the previous year, but I am pleased to say that the wealth which they possessed shows a higher average per capita as compared with those who came in 1914-15. This, I consider, is a satisfactory indication of the desirable class of people who came from the south.

During the past year the tide of immigration from the United States was very much retarded by the almost total prohibition of the importation of horses and mules from that country, and the total prohibition of the importation of cattle, sheep, swine, and poultry, on account of the prevalence of foot-and-mouth disease in the Middle Western States. Added to this were the persistent false rumours of military conscription being in force in this country; and the imposition of a heavy war tax on farm lands.

I am in a position to state that from the tenor of letters received in this office and by Canadian Government offices in the United States and immigration officials stationed throughout Western Canada, thousands of intending settlers were deterred at least temporarily from coming to this country on account of these conditions and rumours.

SETTLERS FROM THE UNITED STATES, 1915-16.

Port of Entry.	No. of Settlers.	Settlers' Wealth.	Carloads of Settlers' Effects.	Value.
		$ cts.		$
Port Arthur, Ont.	76	7,898 00	.....	.....
Fort William, Ont.	41	.....	.....	.....
Rainy River, Ont.	63	20,472 00	.....	2,404
Fort Frances, Ont.	724	117,336 00	12	13,402
Sprague, Man.	104	39,208 00	1	700
Emerson, Man.	3,849	475,607 00	198	295,100
Bannerman, Man.	85	18,622 00	7	4,215
Snowflake, Man.	75	10,000 00	14	8,882
Gretna, Man.	296	206,949 00	27	30,565
North Portal, Sask.	2,361	1,095,459 00	237	347,195
Marienthal, Sask.	14	419 50	.....	300
Big Muddy, Sask.	33	5,320 00	.....	7,049
Northgate, Sask.	49	24,247 00	1	8,725
Wood Mountain, Sask.	13	1,175 00	.....	13,399
Coutts, Alta.	1,019	497,848 00	63	71,474
Newgate, B.C.	90	11,609 00	.....	.....
Rossland, B.C.	61	3,483 00	.....	.....
Waneta, B.C.	63	6,414 00	.....	.....
Kingsgate, B.C.	2,526	327,622 00	81	115,797
Grand Forks, B.C.	113	.....	.....	.....
	11,655	2,869,759 50	641	919,207

The number of applications for farm help, domestic servants, and housekeepers received by the Labour Bureau conducted in the Immigration Hall here, shows a marked increase compared with the previous year, and it is satisfactory to be able to state that 16,144 persons were sent to employment on farms through this office during the year.

The demand for farm hands—both experienced and inexperienced—was so great during the year that this department was unable to fully supply the demands made upon it. This condition has caused a very considerable advance in wages. The following figures may be considered reliable: $35 to $40 per month for thoroughly experienced men, for the season (say seven months), and for inexperienced men. $20 to $25 per month, for the same period, with board and lodging in both cases. Both classes of men had no difficulty in securing work for the winter months at good wages.

Owing to the large numbers of farmers' sons, homesteaders, and farm hands who joined overseas battalions during the year, every man who was physically fit and willing to accept work on a farm, could secure same throughout the whole West. Unemployment for willing workers has ceased to exist in this country.

The demand for the services of domestic servants was so great during the year that this office was only able to fill 20 per cent of the applications received for that class of help. Wages ran from $20 to $25 per month, with board, etc.

The demand for married couples was also good; about 40 per cent of the applications received were filled; $50 per month being the average wage, with board, etc.

During the year the work of inspectors at boundary ports has been considerably increased, owing to the war, and it is gratifying to be able to report that the inspectors have discharged their duties satisfactorily.

During the year the officers and members of the Royal Northwest Mounted Police have rendered invaluable assistance, both to this department and to the settlers, and I feel that I cannot express in too high terms my appreciation of their inestimable services which are always so freely rendered.

The immigration halls in the West have afforded accommodation to many hundreds of immigrants during the year, and I am pleased to be able to report that these halls have been efficiently operated by the officers in charge, and have been kept in a sanitary condition.

CROP YEAR 1915.

The crop of 1915, especially that of wheat, in the three western provinces, as to quantity, quality, and high average yield, will go down in history as one of the greatest the world has ever seen.

The government inspections (all railways) completed to March 31 last, give the following figures:—

Wheat	240,123,820 bushels.
Oats	59,557,552 "
Barley	8,718,510 "
Flax	2,858,787 "

Besides, the quantity of grain in store in country elevators on that date was 50,000,000 bushels of all grain, of which about 45,000,000 bushels was wheat; added to these figures it is estimated there is still 50,000,000 in farm bins and unthreshed.

The correct figures of yields will not be ascertained until August, when it is expected the total yield of wheat will be, at least, three hundred and sixty-five million bushels.

The following tabulated statements give the acreage, total yield, and average yield, per acre, in 1915, by the provinces:—

MANITOBA.

	Acreage.	Yield in Bushels.	Average Yield.
	Acres.	Bushels.	
Wheat	3,664,281	96,662,912	26·4
Oats	2,121,845	101,077,991	47·7
Barley	1,039,849	35,423,495	34·0
Flax	64,843	739,808	11·4
Rye	16,699	364,572	21·8
Peas	3,803	64,955	17·0
	6,911,320	234,333,733	

SASKATCHEWAN.

Wheat	6,884,874	173,723,775	25·2
Oats	2,846,949	130,910,048	45·9
Barley	272,299	9,043,813	33·2
Flax	539,674	6,060,499	11·2
	10,543,796	319,738,135	

ALBERTA.

Spring wheat	1,200,000	42,000,000	35
Winter wheat	45,000	1,575,000	35
Oats	1,450,000	65,250,000	45
Barley	420,000	14,700,000	35
Flax	50,000	600,000	12
Rye	17,500	612,000	35
	3,182,500	124,737,000	
Grand totals	20,637,616	678,808,868	

The value of this enormous crop on the basis of prices which have prevailed since October last is estimated at four hundred and sixty million dollars.

J. BRUCE WALKER,
Commissioner of Immigration.

OTTAWA, June 12, 1916.

This is the twelfth annual report on the work of medical inspection of immigrants, it being for the year 1915-16.

The continuance of the Great War has so diverted the interest and energy of those classes in the countries of Europe from which in past years emigration to Canada has principally taken place, that the total immigrants arriving in 1915-16 in Canada has fallen to 48,537. As a result, the work of medical inspection has been greatly lessened since those arriving in Canada through ocean ports has fallen to 11,600. Those who have arrived from Europe have been indeed largely members of families already in Canada or those who have come in consequence of having relatives here. As a result, no problems have arisen which have not presented themselves in past years and which have not already been discussed in previous reports.

Naturally, with the small number arriving at the seaports, the number of detentions at these ports has been small. The following table gives the total number detained at the several ports and the number of those rejected:—

TABLE I.—Giving Total Detentions at Ports of Entry and Total Rejections by Causes during the fiscal year 1915-16.

Total detentions	325
Total rejections	163
Total releases	162
(1) *Contagious diseases*	0
(2) *General diseases*—	
Tuberculosis	5
(3) *Eye diseases*—	
Conjunctivitis	1
Trachoma	4
(4) *Nervous diseases*—	
Insanity	6
Mental deficiency	5
(5) *Circulatory system*—	
Heart disease	3
(6) *Respiratory*—	
Laryngitis	1
(7) *Digestive system*—	
Hook worm	2
(8) *Genito-urinary system*—	
Syphilis	3
Venereal	1
(9) *Skin diseases*	0
(10) *Malformation and old age*—	
Curvature of spine	1
Deafness	1
(11) *Accidents*	0
(12) *Ill-defined*—	
General debility	1

Of the total detained, 163 were rejected for some special reason, of which only 34 were due to medical causes. Of these 3 were on account of heart disease, 6 from insanity, 5 were mentally deficient, 4 were due to venereal diseases, 4 due to trachoma, and 5 because of tuberculosis.

TABLE II—Giving Deportations from all causes in 1915-16.

Total deportations in 1915-16	1,243
" " 1914-15	1,734
" " 1913-14	1,834
Total due to criminality	329
" public charges and accompanying	640
" vagrancy and immorality	65
" medical causes	209

Comparison of the deportations from all causes with those of preceding years makes at once apparent how the influences, which operate in the individual resulting in his deportation, are not occasional but continuous. The value of extending the period during which a legal deportation is possible is obvious, since doubtless many of those deported entered Canada prior to 1915-16.

Of those deported for medical reasons, this is especially true with regard to three diseases: insanity, feeble-mindedness, and tuberculosis. Except in the case of acute

mania, relatively few cases of insanity will be officially recognized during the first twelve months, through having been placed in hospitals for the insane. Still more will this be true of feeble-mindedness, since cases admitted are not likely to early become the subject of local official action. When it is further remembered that numerous cases of tuberculosis have often existed for many months before being diagnosed as such by physicians, it is apparent that such are still more likely not to be officially recognized very soon after their admission to Canada. The number of deports from each of these three diseases is seen in the following table:—

TABLE III—Giving Deportations on account of Insanity, Feeble-mindedness and Tuberculosis.

Deportations due to insanity,	1915-16	62
	1914-15	144
	1913-14	207
Mental Weakness	1915-16	6
	1914-15	10
	1913-14	15
Tuberculosis	1915-16	47
	1914-15	82
	1913-14	139

TABLE IV.—Giving Deportations by Classes of Diseases.

1 Contagious Diseases	0	2 General Diseases—	
		Arthritis	2
		Alcoholism	4
		Asthma	5
		Diabetes	2
		Drug Habit	3
		Rheumatism	17
		Septicemia	1
		Tuberculosis	47
3 Eye Diseases—		4 Nervous Diseases—	
Acute Iritis	1	Epilepsy	12
Blindness	3	Mental Weakness	6
Keratitis	1	Insanity	62
		Locomotor ataxia	3
		Neurasthenia	3
		Paralysis	1
		Paresis of arm	1
5 Circulatory system—		6 Respiratory System—	
Endocarditis	1	Tonsilitis	1
Heart Disease	12	Bronchitis	2
Varicose Veins	1	Pleurisy	1
7 Digestive System—		8 Genito-urinary System—	
Hernia	3	Nephritis	1
		Pregnancy	2
		Veneral diseases	3
9 The Skin—		10 Malformation and old age—	
Leprosy	3	Deafness	1
		Senility	1
11 Ill-defined—			
Necrosis	1		
Sclerosis	1		
Ulcers	1		

Examining the deportations by classes of disease, it is noted that 4 were deported due to alcoholism and 3 to the drug habit, while on account of eye diseases 5 were deported. Those falling under nervous diseases are much the greatest in number, since there were 12 due to epilepsy, 62 to insanity, 3 to neurasthenia, 6 to mental weakness and 4 to ataxia and paralysis. Under general diseases tuberculosis is by far the most important with 47 deportations, while diseases of the circulatory organs include 12 due to heart disease. In all classes it is evident that the results of persistent maladies and chronic conditions are those causing the largest number of deportations.

I have continued during the year as opportunity has afforded the investigation of what may be called the "social results" of immigration in our several provinces and communities. In Ontario this has been made especially possible in Toronto, which hitherto has received the largest number of immigrants of any city in Canada and especially of British immigrants. The study has been further possible because in the province of Ontario the evolution of social legislation has progressed further than in any other in Canada. This may perhaps be understood when the following figures are examined:—

	Total Hospitals in Ontario.	Total Patients.	Total Population of Province.	Ratio of Patients to population.
1880	12	5,237	1,926,922	1 in 368
1890	24	10,523	2,114,321	1 in 201
1900	52	29,761	2,189,947	1 in 74
1908	69	46,971	2,280,359	1 in 48
1910			2,523,274	
1915	91	85,759		

The picture presented by these figures is remarkable and indicates quite clearly the trend of social forces in Ontario as elsewhere. The increased number of hospitals, and proportionately of the patients, is seen to be marked in 1890, and has notably further advanced by 1900; but by 1910 the rate has enormously increased with the influx of immigrants. The speed seems even so accelerated that by 1915 we find the hospitals and sanatoria more than doubled over 1900, and the patients increased from 29,761 to 85,759 or by almost 200 per cent. Besides these public hospitals receiving government grants there were in Ontario in 1915, 12 sanatoria, 68 private hospitals, 38 refuges, 32 orphanages, 5 homes for convalescents and incurables and 38 houses of industry. While the disproportionate increase of inmates of institutions to the increase of population in the province is obvious, yet it is also evident that the facilities for official recognition of disease, poverty and criminality in Ontario are so great that they may seem to bring into undue prominence conditions which before or elsewhere seemed non-existent, simply because they were not statistically plain. An accurate inquiry into the statistics of the different classes of public institutions in relation to immigrant inmates would afford extremely important information and might in a quinquennial census year like the present very well be undertaken.

I have paid close attention to only one class of disease, that of feeble-mindedness, which has become possible only through the establishment of the weekly clinic at the Toronto General hospital. The number of persons appearing there each week has gone on increasing as its objects and benefits are becoming more widely known and better understood. The social responsibility for the care, education and final disposition of those defectives who are members of immigrant families is a matter of serious concern not only to the community and province, but also to the State at large; and it is to be hoped, as our knowledge becomes more accurate through wider observation and the collection of statistics extending over a longer series of years that conclusions as to the best methods for dealing with these national social problems and the best means of their application to the desired end may be arrived at.

The remarkable absence, since the medical inspection of immigrants was begun in 1904 at the ports of entry, of outbreaks of the acute contagious diseases in Canada due to this source, is one of the best measures of what is possible in dealing with the yet more serious hereditary and chronic diseases as our methods of examination become improved and greater accuracy and precision in the means of dealing with such when discovered shall have been determined and carried into effect.

PETER H. BRYCE,

Chief Medical Officer.

JUVENILE IMMIGRATION.

This is the seventeenth annual report of the Chief Inspector of British Immigrant children and Receiving Homes. A very satisfactory year's work is to be recorded.

The number of children under the direct supervision of the department during the past year was two thousand two hundred and fifty-five, of whom six hundred and seventy-two were girls and one thousand five hundred and eighty-three boys. The distribution of these young people has always been in the direction of the farm.

That the Juvenile Immigration movement is both desirable and beneficial is borne out by ample evidence from those who for many years have been constant employers of this class of labour.

The work is promoted under the prestige of the Local Government Board of London, and with the approval of the Government of Canada.

While the children are subject to the Immigration Regulations of Canada and must pass a critical civil and medical test at the port of disembarkation, no information has reached me that any were rejected owing to physical or mental disqualification during the past twelve months.

It is a pleasure to report that the work of the societies, engaged in supervising and placing the children in foster homes and situations, has been conducted with careful discrimination. The supervision of the children consists of visiting each child at least once a year, looking into any complaints on the part of the child or foster parent, and generally maintaining a parental protection of the child from neglect and unfair treatment.

That there is a deepening of public interest in this philanthropic cause in Canada has been very manifest to this department. The demand for departmental reports and particulars of the work in general, from other countries, has also exceeded that of former years. In consequence of this the clerical work of the office and correspondence incident to it has been largely augumented.

In my official position as chief inspector, visits were paid by me to the children in various portions of the provinces of Ontario and Quebec, which entailed the following labour:—

Total mileage traversed by rail	18,891
Total mileage traversed by horse and motor car	2,489
Total miles	21,380
Number of children inspected and reported upon	1,009
Inspections of Receiving and Distributing Homes	14

With few exceptions, the children who came under my inspection were bright, alert, and contented with their lot. It was an exception to find one under 14 not at school, and generally it was necessary for me subsequently to visit the school in order to see the child. On each call made at the school-house a report was obtained from the teacher in respect to the child's daily attendance, personal appearance, behaviour, and progress in class-room. The reports of the teachers on the progress of the children were entirely satisfactory, few if any being reported as hopelessly dull. Under the wise and very efficient public school regulations of Ontario these children enjoy precisely the same privileges as native Canadians.

The emigration of British children to Canada stands in a unique position in its relation to the general system of Canadian immigration. It is a purely philanthropic undertaking and has not been specially included in the propaganda of our Government

emigration agencies in the British Isles and for that reason its real importance to our growing Dominion has not, until late years, attracted that sympathy and interest from our people which it should demand.

The experiment of transplanting thousands of necessitous but healthy and mentally sound children, from the over-populated districts of the old world, has now become an ascertained and indisputable success after years of observation and close study by this department.

The following table indicates the annual influx of British juveniles to Canada during the past fifteen years, together with the names of societies and individuals under whose auspices the emigration was carried out:—

The following Table shows the Number of Children Emigrated by the Principal Societies and Agencies during the past Fourteen Years.

Agency.	Fiscal Year.															
	1900–1901.	1901–1902.	1902–1903.	1903–1904.	1904–1905.	1905–1906.	1906–1907.	1907–1908.	1908–1909.	1909–1910.	1910–1911.	1911–1912.	1912–1913.	1913–1914.	1914–1915.	1915–1916.	Total.
Dr. Barnardo	385	889	1,150	1,188	1,574	1,434	944	950	1,034	1,010	924	971	933	564	760	293	15,003
Rev. R. Wallace	59	71	75	94	116	112	.....	80	38	46	75	68	49	35	62	.....	980
Miss Macpherson	60	45	.....	142	200	207	91	166	175	175	227	220	229	149	215	101	2,502
Church of England Society	60	85	89	83	84	144	17	126	123	74	103	125	129	218	136	4	1,600
Bristol Emigration Society	33	38	13	40	40	72	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	236
J. W. C. Fegan	43	.....	46	49	53	100	.....	73	75	109	96	99	106	112	117	112	1,190
Liverpool Catholic	43	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	43
Canadian Catholic Society	60	132	125	106	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	423
Catholic Emigration Association	.....	.....	151	206	328	359	175	332	308	317	334	399	318	253	255	162	3,797
Mrs. Birt	95	137	158	106	169	191	70	173	142	187	161	184	147	65	166	3	2,154
J. T. Middlemore	108	99	127	130	.....	298	.....	145	152	129	157	171	155	97	110	83	1,961
National Childrens Home and Orphanage	29	38	41	60	84	102	109	76	90	107	106	103	86	73	65	.....	1,169
Girls Home of Welcome	2	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6
Mr. Quarrier	.....	.....	.....	.....	157	187	.....	183	173	139	192	181	184	186	182	.....	1,764
Salvation Army	.....	.....	.....	.....	.....	20	39	.....	42	44	13	24	98	118	121	53	572
Childrens Aid of London	.....	2	.....	.....	3	.....	.....	.....	24	23	26	27	28	19	30	10	192
Women's National	.....	.....	.....	.....	.....	.....	.....	31	.....	.....	.....	.....	.....	.....	.....	.....	31
Mrs. Wallis	.....	.....	.....	.....	.....	.....	.....	12	13	10	.....	11	.....	.....	.....	.....	46
Mrs. Close	.....	.....	.....	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	3
East End Emigration Fund	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	21	153	.....	.....	.....	408
Self Help Society	.....	.....	.....	.....	.....	.....	.....	.....	13	22	80	47		.....	68	.....	
Mrs. Smyley	.....	.....	.....	.....	.....	32	10	25	22	30	27	38	27	10	31	.....	252
Working Boys Home	.....	.....	.....	8	.....	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14
Private Parties	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	3
Totals	977	1,540	1,979	2,212	2,808	3,264	1,455	2,375	2,424	2,422	2,524	2,689	2,642	1,899	2,318	821	34,349

These young immigrants are placed in homes and situations which have previously been approved. The responsibility of selecting situations rests entirely with the emigration agencies, who assume a personal oversight of the children until they are 18 years of age.

Such persons or agencies must have well managed homes for the reception and distribution of their wards at various points in the Dominion with a well-perfected system for carrying forward their undertaking on behalf of the children.

The finding of homes and situations for these young subjects has become a matter of discrimination and selection by the agencies rather than solicitation, with a view to placing their protégés in the most desirable openings.

Notwithstanding the great falling-off in the total number of young immigrants during the past year it will be observed that the demand has far exceeded the children available.

TABLE showing the number of Children Emigrated by the principal agencies during the past fiscal year, 1915-16.

Society or Agency.	Children Emigrated.	Applications received for children.
Dr. Barnado's Homes, Toronto and Peterborough, Ontario and Winnipeg, Manitoba	293	25,899
Miss Macpherson, Stratford	101	741
Mr. J. W. C. Fegan, Toronto	112	400
Fairknowe Home (Mr. Quarrier), Brockville	.....	664
Mrs. Smyley, Hespeler	.....	[1]180
Mrs. Birt	3	775
The Catholic Emigration Association	162	458
Church of England Waifs and Strays Society, Sherbrooke, P.Q.	1	259
Church of England Waifs and Strays Society, Niagara-on-the-Lake, Ontario	3	378
Mr. Middlemore, Halifax, N.S.	83	300
Salvation Army, Emigration Agency, Toronto, Ont.	53	611
The Children's Aid Society of London, England	16	60
Self Help Emigration Society	.....	.....
The National Children's Home and Orphanage	.....	1,000
	821	31,725

[1]This does not include phone messages and calls at the Home. Only written applications.

Boys are to-day in exceptional demand in the London labour market, and those leaving school are now able to get 15 shilling a week, where formerly they were glad to get 8 shillings. Even the post office has been compelled to advertise for messenger-boys, and as they do not come, girls are being employed at some sub-post offices to deliver telegrams.

Owing to the war and the unusual openings brought about in consequence thereof for boy labourers in Great Britain, a very considerable diminution in our annual immigration is anticipated. So insistent has been the demand for the services of boys at home that the Home Office, on 31st March, issued the following circular letter to the governors of industrial schools:—

> "In view of the need of labour at home the Secretary of State thinks, for the present, boys who would have been emigrated should, except in very special circumstances, be sent to farm situations in England."

The immigration of children during the past year showed a very considerable decrease in comparison with that of previous years. Such was, however, only propor-

tionate to the marked falling-off in immigration during the past year, and was not at all unexpected, owing to conditions created by the war, and the unexpected and urgent demand for boys in munition factories and other fields of labour, in the homeland. The effect of this deficit has already been keenly felt by thousands of Canadian farmers, whose farm labourers had enlisted for service overseas.

The policy of inspection and the after-care of the children adopted by this department, follows as closely as possible the lines laid down by the Local Government Board and Home Office Departments, respectively, of the Government of Great Britain.

The placing of these dependent young people in carefully selected foster homes and situations and their subsequent care and oversight are the most important and essential details of this interesting work. It has therefore been gratifying to observe that reasonable care has been exercised in respect to these matters which permit me to assure those interested that the children are on the whole favourably situated, cared for, contented and doing satisfactorily in their new spheres of usefulness.

From the view point of this department, visits amongst the children by the Homes and Government Inspectors, respectively, cannot be too frequently made, for it must not be overlooked that we are dealing with children and not adults, and therefore constant oversight during the plastic period of their lives is very necessary. Under the strict interpretation of the law, departmental supervision ceases when the boy or girl reaches its seventeenth year, yet whenever it appears to me that advice and counsel to child and foster-parent or employer would be advantageous to both—even though the former has reached the eighteenth or nineteenth year—a special visit is accordingly made. These extra calls I have found to be appreciated, and oftentimes have led to a better understanding of the duty of a boy to his employer.

The oversight of these "little strangers in a strange land" is a trust which I have ever sought to fulfil with a full appreciation of its possible influence on the children who are to become citizens of the great Dominion.

Much labour and expense is entailed by the societies in selecting, equipping, and subsequently looking after their wards in Canada.

When it is decided to permit of the departure of a juvenile from the homeland, he is placed in the legal guardianship of responsible and accredited persons or agencies who must be in good standing with the local Government Board as well as with the Department of the Interior of Canada.

The most suitable ages at which to send children to Canada are from 5 to 14 years.

A great proportion of the homes and schools in England, whence the children come directly to Canada, have been personally visited by me, and a careful study made of the training provided for them. The good influences exerted over them by their teachers in their splendidly equipped, Christian training institutions, have undoubtedly contributed to the success of many of their protegés in after years, on this side of the ocean. In not a few instances, young men, who have done exceedingly well, here, have attributed to me their success in life to the training and example of their teachers at home.

The duties which appertain to my position are purely sociological in character, and necessitate the study of child-life in various phases. That it is a work of deep and unremitting interest, to all lovers of children, is obvious. Amongst the large and complex army of young people, under the supervision of this department, there are comparatively few of inferior type, and for intelligence and alertness—all things considered—they compare well with Canadian-born children of a similar age. Some are, of course, found to be of only mediocre intelligence, and others incapable of grasping the opportunities set before them, and who might be described as "impossible," but this is a contingency which is naturally to be anticipated. However, the percentage of such is so infinitesimally small that these exceptions must not in fairness to the majority, be permited to prejudice one in a just appreciation of those splendid young fellows who have made and are to-day making good throughout Canada.

I may say I can fully endorse what the writer of the following letter has said to the boys he had left behind in the home in England:—

> "Tell the lads in the home not to be afraid to come here, for they will never starve if they are not afraid to work. There is plenty of it, and hard too; so if they come here for ease they are mistaken. They must put their shoulder to the wheel and they will get on in Canada."

In the course of a recent visit paid to the headquarters of an organization promoting the movement of boys from England to Canada, the following letter, from one of their wards, was handed me:—

> "I wish to thank you and the society for all that has been done for me and for the interest and care you have taken in me all these years. I will be 18 in a few days, and free to manage my own affairs."

It is commendable and natural that these young fellows should, after having been under the parental restraint and guidance of the home since early childhood, look forward to the day when they will be able to "drop the pilot," and embark on the sea of life on their own responsibility.

From a personal knowledge of the work of child rescue in Great Britain and the daily life and routine of the children in State and privately-maintained establishments, I am able to speak of the praiseworthy efforts put forth for the material and social uplift of Britain's surplus children.

The object of the authorities in sending these children to the Dominion is not to shirk the responsibility of caring for them, but rather to place them beyond the reach of influences prejudicial to their future well-being.

Amongst the large number of children over whom my official jurisdiction extends there are many who have been precipitated from respectability to practical destitution through causes not of their own creating. The majority of these young people are, however, the offspring of poor but decent families. I have personally seen in England many poor boys living amidst distressing and discouraging circumstances—who through the good offices of Christian people engaged in social reform in the old land—were received into homes and schools and afforded the requisite training to qualify them for emigration to Canada, and subsequently placed in farm apprenticeships. These have been visited by me in their new situations, where I found them as members of the family circle enjoying all the comforts of a real home life and participating proportionally in the prosperity of their changed environment.

To thousands of young people, emigration has been the golden bridge by which they have passed from an apparently hopeless childhood to lives of useful service and assured comfort in this new land.

Daily instances are presented to one's notice of persons who have risen to positions well merited and honourable in Canada amongst whom are not a few who were once "immigrant children."

The whole question of the migration of children from the seat of empire to a comparatively new and developing nation is one that must enlist the interest of all students of national economics.

INSPECTION for 1916. Statement showing the distribution of children by provinces.

Province.	Boys.	Girls.	Total.
Ontario	788	450	1,238
Quebec	194	81	275
New Brunswick	65	20	85
Nova Scotia	32	21	53
Prince Edward Island	4	5	9
Manitoba	10	2	12
Saskatchewan	2	1	3
Alberta	2	5	7
British Columbia	3	2	5
	1,100	587	1,687

GRAND TOTALS—By Agencies.

——	Boys.	Girls.	Totals.
Dr. Barnardo	205	118	323
Miss Macpherson	300	202	502
Mrs. Birt	96	56	152
Chuch of England Waifs and Strays Society	20	14	34
Salvation Army	129	91	220
Mr. Middlemore	98	43	141
J. W. C. Fegan	21	.....	21
Catholic Emigration Association	170	39	209
Manchester and Salford Boys and Girls Refuges	32	13	45
National Children's Homes and Orphanages	16	.....	16
Honourable Mrs. Joyce	.....	3	3
Self Help Emigration Society	5	.....	5
Bristol Emigration Society	1	1	2
Children's Aid Society	3	1	4
Girls Friendly Society	.....	1	1
Foundling Hospital	1	.....	1
Other Agencies	3	3	6
	1,100	587	1,687

From year to year occasion has been afforded me to visit these young farm apprentices, and to see them in the course of their daily life and work. A curriculum of the work assigned boys during their farm apprenticeship has been noted by me, and in view of the frequent inquiries received as to the actual work required of a boy during his course of training, the following statement may convey a better understanding of the subject.

At the age of 10 to 12 years, a boy begins his farm apprenticeship by making himself generally useful to the farmer's wife, doing little odd bits of work, such as carrying water and wood to the house and similar so called "chores." He of course attends school during autumn and winter and early spring months. From the age of 12 to 13 his duties and responsibilities naturally increase, as he has now got his bearings and become familiar with his surroundings. He has also learned the technical names of farming implements, and the daily progress of the farm, and has been "handed over" the work of feeding the calves, night and morning. From 13 to 15 he takes care of the young cattle and pigs, and also cleans the stables, and between the ages of 15 to 17, in addition to the work just mentioned, he does his share of the milking, helps to look after the horses, and has been taught to handle and drive a pair of "quiet working horses." With these horses he is given his first lesson in ploughing,

and is assigned a piece of stubble ground to practise on. He (also) does some seeding and harrowing, marking out ground for planting, and subsequently planting of corn. He also does his share in the cultivation of the potato and root crops. In harvest he drives the mower and hay-rake—work which usually falls to the lot of a boy. He drives the hay-loader or helps to build the loads of hay, and operates the hay-fork, shocks grain and stores sheaves in the mow. In the late autumn he is picking and packing apples, harvesting and loading potatoes, turnips, and other field root crops and helps with the fall ploughing when possible. From his seventeenth to twentieth year he should be found to be doing practically a man's work.

If he is an ambitious boy he should save during the years of his apprenticeship sufficient to enable him to take a short course at a dairy school or agricultural college during the winter months—as many Old Country boys I have known have actually done, with great credit to themselves.

In placing and indenturing boys it is difficult to do so on a uniform scale, as physique, stamina, and alertness must be taken into account. For a boy of 12 or 13, clothing and schooling is quite sufficient, the former being equal to a fair wage.

The cost of clothing a farmer's boy for one year should not be less than $36. He would require:—

Boots	$ 6 00
Suit of clothes	10 00
Underwear	3 00
Stockings, collars, tie	3 75
Other miscellaneous articles	4 00
School books and reading matter	7 00
Exhibition, church socials, and other treats	3 00
	$36 75

For a boy between the ages of 14 and 17, who has been on a farm from the age of 12-13, a wage of from $8 to $10 a month, according to his strength and adaptability should be given. From 17 to 18 the services of a faithful worker should be worth at least $16 a month.

However, as it has already been pointed out, the wages can only properly be measured by the capability of the individual. In addition to the wages stipulated, the fact must not be overlooked that the boys also receive a comfortable and good living.

The agencies through which children are sent to Canada are held responsible for their after care in Canada, a guarantee for which is exacted from those engaged in the work by the Governments of Great Britain and Canada, respectively. The Home stands *in loco parentis* to the child until it has reached its 18th year.

The conditions of emigration briefly stated are: after having the children under training for a definite period the Homes must be satisfied that they are mentally and physically fit to pass successfully the rigid civil and medical tests to which all persons destined for settlement in this part of the Empire are subjected.

That the children have in past years been of a good class is borne out by the reports of officials who have been brought into close touch with the children individually. It is quite reasonable to expect that there will be some who, after being settled in the Dominion, may in later years show moral or physical tendencies which would place them in the category of undesirables.

The societies have co-operated willingly with the department in dealing with such when they appeared, although not legally responsible, after the individual had been a resident of Canada beyond the period during which action for deportation may be taken under the existing regulations.

The adaptability of Old Country lads for farm work has been well established. Fortunately the result of this great work of child rescue and emigration can now be pronounced upon not in theory but from actual practical experience. During the past forty years, approximately eighty thousand of Britain's surplus children have been received into foster homes and situations in this overseas Dominion. So tremendously satisfactory have been the reports regarding the training and adaptability of this army of young Britons that the call for their services and adoption into Canadian homes has been so great that, as has already been indicated, the supply has hardly reached a fraction of the demand.

It must not be imagined or expected that all such children will remain in service indefinitely. Many do, and in doing so help to increase the productability of the land and develop the hidden resources of a most fertile country, but thousands have become owners of the soil, employing others; and thousands more are added to professional, commercial, and industrial classes and vie with Canadian born in their zeal for the religious, social, and material advancement of the land of their adoption.

Not alone have the energies of the boys and girls, too, in a more limited though equally admirable way, been enlisted in all that goes for the advancement of the peaceful arts, but by the thousands these boys have not hesitated to join the colours, and are now fighting the battles of the Empire on the fields of France and Flanders, nor are these same young British-Canadians behind others in acts of bravery and prowess. Reports from the front indicate that these once almost unrecognized boys have proved beyond question that they are equal to their more fortunately born brothers in defending the blood-bought liberties won for the British nation in its numerous struggles of bygone days. Reports show that two thousand six hundred and thirty-five of these youths and young men have answered the call of King and Country. Of this number it may not be uninteresting to state that six hundred and ten were from poor law schools, and sent to Canada by the authority of the Local Government Board, and had been for some years under supervision of this department.

NUMBER of boys emigrated by the various Agencies, who have enlisted for Active Service overseas, up to date, March 29, 1916.

	Poor Law.	Non-Union.	Totals.
Dr. Barnardo	232	882	1,114
Miss Macpherson	143	35	178
Mr. Middlemore	35	260	295
Manchester and Salford Boys and Girls Refuges	6	8	14
National Children's Home and Orphanages	18	.....	18
Church of England Boys and Girls Refuges	62	185	247
Salvation Army	3	36	39
Mr. J. W. C. Fegan	14	186	200
Mrs. Birt	46	32	78
Mr. Quarrier	.....	163	163
Catholic Emigration Association	51	238	289
	610	2,025	2,635

The following figures will show at a glance the results of the inspection of such children as fall under the immediate supervision of the Department of the Interior:—

Number of children found in Homes and stations—	
Good	1,971
Fair	51
Unsatisfactory	12
Health—	
Good	1,986
Fair	41
Unsatisfactory	7
Progress—	
Good	1,792
Fair	217
Unsatisfactory	25
Conduct and Character—	
Good	1,896
Fair	134
Unsatisfactory	4
Additional or duplicate reports	288
Poor law boys formerly under the supervision of this department, who had enlisted for overseas service	286
Did not actually arrive in Canada during 1914, although their emigration was approved for that year	21
Temporarily lost track of	78
Absent on occasion of call of inspector at their homes	30
Returned to England	11
Removed to the United States	4
Marriages	1
Deaths	8
Absconded	6
Number of children eligible for inspection—	
First of January, 1915	2,166
Duplicate and special reports made during the year	442
Total number of reports	2,608

Philanthropic societies have accomplished marvellous results on behalf of poor and necessitous children, and by wise direction have transformed thousands into self-respecting and self-supporting citizens, from conditions exactly the opposite. These same or similar organizations will, after the war, be compelled to add to their activities and must of necessity adopt new and enlarged plans to meet the changed circumstances of their work.

Despite discouragement, criticism, and opposition, often from influential quarters, those at the head of the societies never altered their objective, but trusting in God—who by means in many cases unknown to any one, has continued to shower His blessing on their efforts—the work has gone on quietly and effectively and with wonderful and far-reaching results.

The war will assuredly change the conditions but not the purpose. So it is borne in upon all who may consider the subject from what has been said in the foregoing, that so far as the policy of saving children from the danger of lives of indolence and helplessness and prejudicial surroundings to lives of sobriety, usefulness, and self-reliance, and thus to produce industrious men and women, law abiding, God fearing, and patriotic, has been alike advantageous, both to the children and to the Empire.

Emigration under favourable auspices will certainly play a most important part in working out the solution of the social problems, which will undoubtedly arise at the close of the war. And such emigration, under the supervision of the Government, will be no loss to the country, provided it is directed to the overseas Dominions, where it will add increased strength and cohesion to the great British Empire.

By the death of Mrs. Louisa Birt on 7th May, 1915, following a prolonged illness—a pioneer in the cause of child immigration—the work has suffered a great loss. Mrs.

Birt was particularly well known in the province of Quebec and eastern portions of Ontario where for well-nigh forty years she had annually placed her young protegés in foster homes and under apprenticeship with farmers.

In co-operation with the late Miss Macpherson, her sister, who, by the way, was the originator of the juvenile immigration movement to the Dominion, the first band of children was brought to this country by these ladies in 1870. For forty-six years, therefore, without interruption, parties of young people have annually arrived in Canada and been given a start in life by these philanthropic ladies.

Miss Birt, who was her mother's assistant for many years, has succeeded to the general management of the Homes.

RECEIVING AND DISTRIBUTING HOMES.

These homes were not established as places of training for the children on their arrival in Canada, but are merely intended to meet the requirement of a home to which a child might, when occasion necessitated, return until another situation might be found for it. Each emigrating agency maintains a suitable and well-equipped establishment for this purpose.

There are thirteen receiving and distributing homes in the Dominion, all under the inspection of this department.

G. BOGUE SMART,
Chief Inspector British Immigrant Children and Receiving Homes.

PART III

SURVEYS

SURVEYS

REPORT OF THE SURVEYOR GENERAL.

The amount appropriated by Parliament for Dominion Lands surveys during the fiscal year 1915-16 was $1,043,500, practically equivalent to the appropriation of the previous year.

INITIAL MERIDIANS AND BASE LINES.

The initial meridians and the base lines, which are the governing lines of the whole system of Dominion Lands surveys, have been established so far beyond settlement that their further extension has ceased to be very urgent, and the number of parties engaged on that work could be reduced to six. They surveyed 962 miles.

A record was made in producing the Sixth meridian two miles into township 127, which is also two miles beyond the northern boundary of Alberta, the farthest point north reached by the Dominion Lands system. This brings Dominion Lands surveys 763 miles north of the international boundary. In the other direction, they stretch in an unbroken network from tide water on Hudson bay at Port Nelson to tide water on the Pacific at Burrard inlet, and Semiamu bay, nearly 1,400 miles.

Although far north, good farming country was found on the Sixth meridian. Keg River trading post is in the centre of a beautiful prairie consisting of several townships of good agricultural country. Good stretches exist also along Battle river. North of township 120 are the Cut Knife mountains, the soil of which, under its coating of deep moss and stunted spruce, remains frozen throughout the summer.

Good country was found on the Wabiskaw between Peace river and the Fifth meridian, but it is difficult of access at present.

East of lake Winnipegosis and south of Saskatchewan river is a stretch which the surveyor describes as the finest agricultural land he has seen in northern Manitoba.

Elsewhere, the surveys of base lines and meridians have not disclosed much land of value. The country has been explored for twelve miles on each side of the line surveyed and the information obtained is shown on the exploration maps appended to this report in monograph form.

TOWNSHIP SUBDIVISION.

The regular township subdivision surveys have hitherto been performed under contract, at certain rates per mile fixed from time to time by the Governor in Council. The method has proved most unsatisfactory.

In 1913 it was recommended that the contract method be abandoned and that in future the subdivision of townships be executed by surveyors and parties paid by the day. The arguments in support of this recommendation were as follows:—

1. The system of Dominion Lands surveys is an adaptation of the United States system. The method of surveying under contract was one of the features borrowed from the United States: it had several advantages, and as land had little value, it was believed that the imperfection of the surveys was of small consequence. The system was cheap, and as little or no inspection was made, it gave no trouble for the

time being. Surveyors were ready to undertake surveys for almost any remuneration. At one time, tenders were called: the rates asked by the surveyors were so absurdly low that they have since been fixed by Order in Council at a figure sufficient for doing the work irrespective of what the surveyors would be ready to accept. A consideration which had great weight when a rush of immigration set in was that the amount of surveying which could be performed under the contract system was unlimited. With work paid by the day, the amount was limited by the number of qualified surveyors available: there was no such limitation with contractors.

2. The objections to surveys made under contract are many. The cost of a subdivision survey cannot be estimated in advance: it depends upon the nature of the ground and upon other circumstances unknown both to the Government and to the contractor, and which cannot be foreseen. No schedule of rates can be devised which will afford fair remuneration to the contractor in all cases without being excessive in any case. A contractor may make large profits if he happens to strike good country and is favoured by circumstances, while another may lose money through no fault of his own if circumstances are against him. If he is unable to pay the wages of his men or his bills for supplies, the creditors ask payment from the Government and are aggrieved when it is refused.

3. Before a contractor is paid for a survey, some one should go over the lines in order to make sure that the survey for which payment is asked has actually been made. This inspection is never made for the obvious reason that it costs as much to inspect a survey line as to survey it in the first instance, the inspection involving the same measurements as the survey itself. If all the lines were inspected, the inspector might as well survey them himself and dispense with the survey of the contractor, thus saving the cost of the contract.

In the early days, very little inspection was made: the word of the contractor that the survey had been correctly executed was accepted and he was paid. We are now going over these old surveys; many of them are incorrect. Sometimes we can find no trace of a survey, and it is a question whether the original survey, which was paid for, was ever made.

4. At present, an inspection is made of a few miles in each contract. If nothing wrong is found, it is assumed that the remainder of the contract has been executed and that the survey is correct, but there is no direct evidence that such is the case.

5. There are five inspectors and a chief inspector of surveys; the cost of inspection is over $68,000 a year. The expenditure on contract surveys this year is $240,000, so that the inspection costs more than one-quarter of the work inspected. It is true that the inspectors do some little work besides inspection, but it does not amount to much.

6. Some surveyors do good work under contract; others do not. When a contractor's work is found defective, he is invited to correct it. He corrects the defects pointed out by the inspector, after which a new inspection is made and new defects are discovered. This may happen again and again until so many inspections are made that it would have been cheaper for the inspector to make a new survey.

7. When the survey is very bad, the situation is most embarrassing. The bond given by private sureties for securing the advances does not appear to have much value; we have lost the cases that were brought before the courts. Surety companies are the only ones from whom we have recovered because they prefer paying to being sued by the Government. Practically we have the alternative of accepting bad work or losing our advances.

8. A large proportion of the appropriation for Dominion Lands surveys is now being expended in resurveying townships imperfectly subdivided under contract. The lands being settled and occupied, the resurveys are very intricate, unsatisfactory to

the settlers, and most expensive. Money would have been saved if the surveys had been properly made in the first instance. For this reason alone, if for no other, the contract system should be abolished.

9. Land has become too valuable for the imperfections of the contract system. The value of one or two acres in a quarter-section represents many times the difference in cost between a good and a bad survey.

10. After he has finished the survey in the field and received 75 per cent of the amount of the contract, the contractor attends to the preparation and correction of his field notes when he is not otherwise engaged. This is the cause of serious delays: it is seldom less than two years before the township plans are issued and the lands thrown open to settlers.

11. With competent surveyors and properly organized parties, there is no reason why subdivision surveys paid for by the day should cost much more than if executed under contract.

12. The contract system was discarded in 1910 by the United States. The last report of the Commissioner of the General Land Office contains the following remarks:

> "June 30, 1911, was the close of the first fiscal year under the direct system, and it is gratifying to be able to report that it has been an unqualified success. When the change in method from the contract to the direct system was first considered, it was expected that the cost of production would not be greater than that in the procedure which it was proposed to abandon. It was conceded that greater expedition would ensue and better work be accomplished, and this alone would have justified the change. The work of last season and this season, however, has shown that the average cost of survey of a township under the direct system is $750, or a saving of about $5 per mile, the average cost of surveys under the contract system being $15 per mile. . . . . There is, in addition, a saving of from one to two years in time, counting from the time of the appropriation to the completion and adoption of the survey."

Before finally adopting the recommendation to perform subdivision by day work, it was decided to give the new method a trial. This was done with one party in 1914, and the experiment proved so encouraging that the method was adopted for all regular subdivision surveys in 1915. The result has been an unqualified success. The work accomplished and net cost per mile, which are given below, are obtained by deducting from the total expenditure of each surveyor the value of the outfit remaining on hand at the end of the season. Four of the surveyors took levels, which was not done under the contract method; the cost of the levels was also deducted from the total expenditure.

REGULAR TOWNSHIP SUBDIVISION—1915.

Surveyor.	Miles.	Total expenditure.	Value of outfit.	Cost of levels.	Net cost.	Cost per mile.
		$	$	$	$	$ cts.
Baker, J. C.	471	16,170	469	.....	15,701	33 33
Buchanan, J. A.	412	14,816	606	.....	14,210	34 49
Christie, W.	454	10,759	352	765	9,642	21 23
Davies, T. A.	345	14,237	952	.....	13,285	38 50
Day, H. S.	344	14,850	349	.....	14,501	42 15
Fawcett, S. D.	409	15,377	889	.....	14,488	35 42
Glover, A. E.	404	14,906	480	.....	14,426	35 70
Heathcott, R. V.	455	14,993	690	.....	14,303	31 43
Johnston, J. H.	460	14,789	300	885	13,604	29 57
Knight, R. H.	381	14,965	696	.....	14,269	37 45
Lighthall, A.	511	14,766	875	945	12,946	25 33
McEwen, D. F.	562	13,937	542	.....	13,395	23 83
Pearson, H. E.	502	13,757	479	.....	13,278	26 45
Pierce, J. W.	628	17,419	788	.....	16,631	26 48
Rolfson, O.	558	13,399	325	.....	13,074	23 43
Scott, W. A.	470	14,286	398	790	13,098	27 87
Tipper, G. A.	375	15,116	659	.....	14,457	38 55
Tyrrell, J. W.	423	10,946	362	.....	10,584	25 02
Waddell, W. H.	448	*15,000	300	.....	14,700	32 81
	8,612	274,488	10,511	3,385	260,592	30 26

*Estimate only—Accounts and returns not in yet.

The comparison between subdivision under contract in 1914 and subdivision by day work in 1915, is given below:—

Year.	Method.	No. of parties.	Miles surveyed.	Total cost.	Cost per mile.
1914	Contract....	18	7,686	$ 229,303	$ 29 83
1915	Day Work..	19	8,612	260,592	30 26

The cost per mile of day work is 43 cents more than contract work, less than one and a half per cent, but an examination of the table for 1915 shows that the average cost of day work is considerably increased by the high individual cost of three surveyors. By placing in charge of subdivision surveys those surveyors only who have made a success of this kind of work, as has been done in 1916, the cost will be substantially less than under contract. It must be recognized, however, that day work is possible only so long as surveyors are left free to select and engage their own labour, without any interference. The advantage of the surveyor on salary over the contractor is that he has better credit. His men know that their wages will be paid when due, and a merchant, if not paid cash, knows that he has not long to wait for his money. It is not so with contractors; when they do not fail, leaving their creditors unpaid, they are generally slow in paying, and are accordingly charged higher rates.

At the inception of Dominion Land surveys, a road 99 feet wide was laid out on every section line, and marked on the ground by the surveyor. This is what is called the first system of survey. Later, the width of the roads was reduced to 66 feet, and

every alternate road running east and west was suppressed. This is the third system of survey, which extends over the greater part of the country. In subdividing a township of the third system, the surveyor marked only those section lines along which were the roads, the section lines without roads, the "blind lines," remaining unsurveyed. This is a great handicap to the new settler: to find the limits of his quarter-section, he has first to locate the quarter-section corner on the blind line, and this, especially in wooded country, is more than an ordinary farmer can manage. The procedure has now been changed, and in subdividing a township all section lines are surveyed and marked on the ground, whether the township is of the first or of any other system. The change is one which will be thoroughly appreciated by new settlers.

TOWNSHIPS SUBDIVIDED.

Most of the townships subdivided are in the Peace River district. The construction of railways to Spirit River and Peace River Crossing has made the country easily accessible, and turned the flow of new settlers in that direction. The survey parties were spread along Peace river from Fort St. John, in British Columbia, to below Vermilion. Others were south and east of Lesser Slave lake and on Athabaska river below McMurray. The land immediately adjoining the Alberta and Great Waterways railway between Lac la Biche and McMurray was laid out into sections. Although little of it is adapted to farming, some pieces will be taken up and the railway itself will require grants.

In addition to the nineteen parties engaged on regular subdivision work, twelve parties were employed on miscellaneous and scattered subdivision at various points in Manitoba, Saskatchewan, and Alberta. Seven parties were working in the Railway Belt of British Columbia. In the western part of the belt, the land, which is very valuable, is disposed of in quarter quarter-sections, or legal subdivisions, of forty acres, the corners of which have to be marked by boundary monuments. This not only increases the work on the survey line but also the number of lines to be surveyed, and with the heavy timber contributes to make the surveys in that section of the country exceedingly expensive.

INSPECTION.

The system of inspection has been modified to adjust it to the new conditions of subdivision surveys. The camps of most surveyors were visited, the work examined, and a report made upon the organization and equipment of the parties. Three inspectors were employed on this work, and in addition the Chief Inspector of Surveys spent five weeks in the field.

When not otherwise engaged, the inspectors occupy their time on miscellaneous surveys.

WATER AREAS.

Many of the bodies of water which existed at the time of the original survey have since partially or wholly dried up, leaving their beds available for cultivation. Twelve parties were employed in making a new survey of these areas. The surveyor's instructions are to make a thorough investigation of each township, to survey every body of water found in it and to obtain all the information necessary for the preparation of new township plans representing actual conditions. He is also directed to report upon the condition of the boundary monuments in the township, and any other feature of the township survey. Occasionally he may, where necessary, erect or restore a few boundary monuments, but his party being small, work of this nature is preferably allotted to larger parties.

The twelve parties investigated 734 townships. They surveyed 5,007 miles for the water areas, and resurveyed 762 of section lines. The table below gives a synopsis of their work.

STADIA SURVEYS.

Surveyor.	Water areas miles.	Re-survey miles.	Total mile-age.	No. of town-ships.	No. of lakes.	Total cost.	Cost per mile.	Cost per town-ship.	Cost per lake.
						$	$ cts.	$ cts.	$ cts.
McKnight, J. H.	577	8	585	31	216	5,479	9 37	176 74	25 37
Boulton, W. J.	564	12	576	39	134	5,067	8 79	129 92	37 80
Neelands, R.	526	129	655	50	263	5,116	7 80	102 32	19 45
Soars, H. M. R.	523	2	525	45	276	5,387	10 26	119 71	19 52
Fletcher, W. A.	484	62	546	27	349	4,946	9 05	183 18	14 17
Martindale, E. S.	(294)	20	469	(59	147	3,618	12 02	67 12	24 51
Coltham, G. W.	(155)			(25	83	2,020)			
Cowper, G. C.	294	84	378	81	87	5,313	14 06	65 59	61 07
Bowman, E. P.	440	34	474	54	238	5,695	12 02	105 46	23 93
Roberts, O. B.	390	92	482	76	183	5,642	11 70	74 24	30 83
Bennett, G. A.	340	131	471	75	176	5,514	11 71	73 52	31 33
Palmer, P. E.	238	75	313	64	244	5,193	16 59	81 14	21 28
Rinfret, C.	182	113	295	108	125	4,642	15 73	42 98	37 14
	5,007	762	5,769	734	2,521	63,632	11 03	86 69	25 24

ALBERTA-BRITISH COLUMBIA BOUNDARY.

From the international boundary to the 120th degree of longitude, the boundary between British Columbia and Alberta is the continental divide. The location of this boundary, commenced in 1913, was continued. The two provinces and the Dominion pay each one-third of the cost. R. W. Cautley, D.L.S. and A.L.S., is commissioner for the Dominion and Alberta. A. O. Wheeler, B.C.L.S., is commissioner for British Columbia. Mr. Cautley locates and marks the boundary in the passes; Mr. Wheeler makes a topographical survey of the boundary in and between the passes. About twelve miles of line was delimitated in the passes and twenty-six boundary monuments erected. All work so far has been south of the Kicking Horse pass, the passes marked last season being the Akamina, Elk, Dome, and North Fork.

TOPOGRAPHICAL SURVEY.

With the exception of Mr. Wheeler's survey of the interprovincial boundary, the only topographical work was a survey of Jasper park. The season was not favourable; of 114 days, only 48 were fine, and even then the work was often retarded by haze or cloud shadows.

SETTLEMENTS AND TOWNSITES.

A number of small settlements and townsites, principally in Manitoba, were surveyed. River lots were laid out on Carrot river, and at Grand Rapids on Saskatchewan river in Manitoba. The St. Julien addition to the town of Banff was surveyed on Tunnel mountain.

TIMBER BERTHS AND MINERAL CLAIMS.

Two timber berths with eleven miles of boundaries were surveyed.

Every mineral claim is designated by a lot number in the group to which it belongs. Before the issue of the patent for the claim, the regulations require a survey under instructions of the Surveyor General. Twenty-nine of these claims were surveyed.

YUKON SURVEYS.

The Surveyor General is represented in the Yukon Territory by a Director of Surveys, assisted by one draughtsman. According to the director's report, which is appended, the returns of fourteen surveys were filed in his office. These consisted of Indian reserves, road traverses, and surveys in connection with mining claims.

RESURVEYS.

The evils of the slovenly surveys executed under the contract system in the early days are coming home now that the land is being settled. They are of two kinds: inaccuracy of the survey and lack of permanency of the boundary monuments. At that time land had little value, and any kind of survey was considered good enough. Inaccuracy is obnoxious, but the greatest trouble is caused by the loss of boundary monuments. At first wooden posts were used, as they had been in the eastern provinces, but the conditions were quite different. In the east these posts were made of durable wood, and the lines blazed in timber remained visible for a long time; in the west the posts were of poplar, a kind of wood which decays quickly, and where lines were blazed in the woods, the timber was so light that a single fire obliterated it. In the eighties, a piece of small gas pipe was substituted in the place of the wooden post, but it was easily pulled out and many have disappeared.

A new style of post has now been adopted. It consists of a one-inch iron pipe thirty inches long and filled with concrete. A malleable iron foot-plate prevents the removal of the post after it has been planted. The numbers of the section, township, and range are stamped in plain figures on a bronze cap, and the inscription can be understood by anybody. The adoption of this new post is the most important step that has yet been taken for the improvement of the surveys of the Dominion Lands. The two principal needs of a land owner are the security of his title and the security of his boundaries. His title is looked after by the Lands Titles Offices. The security of his boundaries depends upon the permanency of the boundary monuments; so long as they are in evidence, there is no room for dispute between himself and his neighbours.

To a person not conversant with surveying, the loss of a boundary monument may appear to be a matter of no great consequence, involving nothing more than the erection of a new monument, but that is very far from being the case. If the land is settled, vested rights intervene, and it is only in sparsely settled places that after a great deal of trouble, new monuments can be erected to which no one will object. In townships where any considerable proportion of the land is patented, any attempt to resurvey the lines is almost sure to prove a failure, and the only course open to the owners is to bring their disputes before the courts for adjudication.

Another source of trouble is the existence of several monuments to mark one corner; sometimes, but not always, the difficulty can be adjusted.

The Dominion Lands Surveys Act authorizes the Minister to have a resurvey made of a township on receipt of a petition stating that the monuments have disappeared and cannot be found. The same provision has been enacted as a provincial statute by the legislatures of Saskatchewan and Alberta, but not by Manitoba. Under

this arrangement, it has been found possible to make resurveys which will hold good in law, in townships where the amount of lands alienated is small. Of course, the work is very expensive.

Five parties were engaged on this work. They resurveyed wholly or partially thirty-five townships and the settlement of Lac la Biche. In addition, small resurveys were made at a number of places by the same surveyors.

Errors in surveys are more difficult to correct. In old times, it was contended that a farmer whose patent calls for 160 acres, but whose quarter-section contains only 120, is just as contented as if he had 160 acres so long as he is not made aware of the shortage. In the first Dominion Lands Act, the contents of a quarter-section were declared to be 160 acres, whatever the actual contents might be. There may be some merit in this view when the discrepancy is small, but when it is large there cannot be two opinions as to the duty of the Administration to correct the error, if it can be done. The difficulty is that when a man has a grant from the Crown, no one has the right to displace his boundaries, whether they are in error or not. Three surveyors were engaged in work of that nature, and in adjusting difficulties of all kinds. They visited about eighty townships in all. Sometimes they were successful and sometimes they were not.

Unlike township subdivision, the initial meridians and base lines have, fortunately, for the last thirty-six years, always been surveyed with care by day work, and the result, taken as a whole, is remarkably accurate; but with the perfection of our organization and methods, we now discover discrepancies which, although individually small, assume material proportions by accumulation over the immense area covered by Dominion Lands surveys. In expanding the system, it is necessary to know the exact size and location of the discrepancies so that they may be allowed for in the expansion. For this purpose, one party retraced 677 miles of base lines and initial meridians. Advantage was taken of his survey to level the lines retraced.

Another method of adjusting the discrepancies of governing lines is by means of astronomical observations. One surveyor made determinations of the latitude with a zenith telescope at a number of points, mostly in Manitoba and Saskatchewan. Each point of observation was connected by measurement with some corner monument of the Dominion Lands system.

STATEMENT OF MILEAGE SURVEYED.

The following is a comparison of the mileage surveyed each year since 1913:—

Nature of Survey.	April 1, 1913, to March 31, 1914.	April 1, 1914, to March 31, 1915.	April 1, 1915, to March 31, 1916.
	Miles.	Miles.	Miles.
Township outlines	3,760	3,270	2,524
Section lines	7,918	7,100	7,725
Traverse	5,748	5,141	7,234
Resurvey	1,632	2,544	3,441
Total for season	19,058	18,055	20,924
Number of parties	66	59	53
Average miles per party	289	307	395

Owing to the nature of their work twelve parties are not included in this year's statement. The surveys of the fifty-three parties cost $628,815, or $30.05 per mile.

OFFICE WORK.

DIVISION OF SURVEY INSTRUCTIONS AND GENERAL INFORMATION.

The work performed by this division consists, in general, of the preparation of instructions for the surveyors who are engaged in the field operations, the entering of all survey returns in the various registers, the issuing of all preliminary plans, the answering of requests for information received from the general public and from other branches and departments, and the issuing of the annual report of the branch.

The preparation of instructions for the surveyors in charge of parties in the field is perhaps the most important work of the division. Greater accuracy and precision in the surveys is being constantly demanded, and this necessitates more work and greater care, in the issuing of instructions as well as in the performance of the surveys and the examination of the returns. The preparation of instructions for any particular survey involves the collection of a great deal of information about the surveys which have already been made in the vicinity, the nature of the country, the roads and trails, the best means of transportation, etc. Plans and sketches must also be prepared to accompany the instructions, showing all information about the section lines already surveyed, as well as about any Indian reserves, townsites, settlements, forest reserves, etc., which are located in the townships to be surveyed.

Another important part of the work is the dealing with communications from settlers and others, and the answering of inquiries about surveys from other branches and departments. This involves the preparation of a large number of sketches, tracings, and maps, and the copying of many pages of field notes. As part of this work, the distribution is carried on of all the publications issued by this branch, including plans, maps, reports, and pamphlets. The number of sectional maps alone which are sent out amounts to many thousands.

As a rule, the writing of descriptions for insertion in the patents for all regular parcels of land is done in the Lands Patents Branch of the department. In all cases, however, except for mineral claims where the parcel is very irregular and the description is complicated and difficult, the description is prepared in this division.

During the period the surveyor is in the field he is required to furnish sketches from time to time showing the progress of his work. From these sketches preliminary plans of the townships are issued in order that the lands may be opened for entry at once without waiting for the examination of the surveyor's final returns and the issue of the official plans. Four copies of each plan are required for the townships in Manitoba, Saskatchewan, and Alberta, and six copies each for the townships in the railway belt of British Columbia.

In this division all returns of survey are received, including plans and field notes of township, settlement, and miscellaneous surveys of levelling operations and of the survey of timber berths, mineral claims, and rights of way. These returns are entered up in the various registers and on maps, a record being kept of the surveys performed each year by each surveyor and of the progress of each surveyor's work in the field. When the examination of the plans and field notes has been completed they are sent to the Survey Records Branch to be placed on record.

The preparation of the third edition of the pamphlet entitled "Description of the surveyed townships in the Peace River district in the provinces of Alberta and British Columbia" was commenced during the year 1914-15. The war, however, caused a decided falling-off in the number of requests for the report and, in consequence, it was decided to postpone the issue for the time. The work of preparation was again taken up during the latter part of the past year, and it is expected that the new edition will be issued in two or three months.

The topographical surveys in connection with townsite subdivision which were commenced in 1912 were again carried on during the year. Surveys were made of

a subdivision known as the St. Julien addition to the town of Banff, containing an area of about 100 acres on the southwest slope of Tunnel mountain. As the plan of this area prepared last year did not show the topography in sufficient detail for laying out the subdivision further levels had to be taken and a new topographical map prepared. From this map a scheme of subdivision was laid out. Plans of the blocks on a scale of twenty feet to an inch were made and from these all the information necessary for the execution of the survey was calculated. On completion of the survey the surveyor's returns were examined and a plan of the subdivision was compiled for publication. It is expected that this plan will be issued shortly.

A new feature of the work of the division is the examination of plans showing rights of way for irrigation ditches or works to accompany the licenses of occupation which are granted in such cases. In the past the Irrigation Branch has had difficulty in some cases in registering the licenses of occupation in the Land Titles offices because of lack of information or errors in the plans submitted. It was with a view to obviating this difficulty that the Superintendent of Irrigation requested that the examination of these plans be undertaken by this branch. The plans are not approved, as most of them have been prepared from surveys made by the engineers of the Irrigation Branch and not by qualified surveyors. Suggestions are merely made in regard to the points in which the plans are considered defective. The various suggestions which have been offered have now been incorporated in the instructions issued by the Irrigation Branch for the preparation of right of way plans. This examination involves considerable work as some of the plans are complicated and in many cases have to be re-examined.

DIVISION OF EXAMINATION OF SURVEYS.

The work of this division comprises the examination of the returns of survey of all Dominion Lands except subdivision in the railway belt in British Columbia, together with the preparation of all official plans thereof; it includes the examination of all surveys of mineral claims, and of all plans of railways and provincial roads.

The work begins with the receipt of the field notes of survey and other final returns, and ends when these have been examined and the required corrections obtained, the official plans prepared and the final returns have been sent to the Survey Records Branch. The bulk of the field notes are received during the last four months of the fiscal year, and are dealt with during the subsequent year.

Before subdivision can be undertaken it is necessary to extend a framework of precise surveys of meridian and base lines as a control, but no official township plans are made until some subdivision has been done. The cessation of contract surveys has not greatly affected the work, as the contracts of the preceding year were on hand. This work has all been completed and the remaining twenty-nine contract accounts closed.

The first returns received from the surveyor in the field are sketches showing the progress of his work. These are examined to see that correct methods are being employed and that satisfactory results are being obtained. Nearly 1,300 of these sketches are received during the field season.

The twelve surveyors investigating former lake beds and traversing lakes in the older parts of the western provinces are required to plot their surveys as fast as they are made, and to transmit their field notes and plots without delay to this office. These are examined to ensure their accuracy; the plots are combined by tracing into larger plans, which in turn are reduced by photography for the compilation of the new township plans.

An important change was made in the preparation of plans with the result that they now show in what year and by what surveyor each monument on the plan was

erected or last renewed. This information requires considerable time to secure, but greatly adds to the value of the plans.

The compilation of a township plan comprises a great many operations. First, is the proper entry of the new survey in the records of the office; then, a cursory examination of the returns; then, the records are consulted for a complete list of former surveys affecting the township. When this has been done the new survey receives its final examination, and is combined with the former surveys on the new plan. If the examination reveals errors or discrepancies in the field notes, or other defects, these must be corrected before the plan can be completed. The new survey often reveals gross errors in the old that make it impossible to complete the plan before further surveys have been made on the ground. Plans of lakes and rivers have to be reduced to the proper scale. A list of the lands that have been disposed of is obtained from the Patents Branch. When the plan has been compiled, the work is all carefully checked by another member of the staff, and is passed by each of two other members before being finally accepted. It is then sent to another division for copying. When this has been done it is returned for further checking of patented lands and for comparison of the copy, after which it is ready to be photo-zinco-graphed for the printing press. Plans to the number of 950 were prepared.

With regard to the maps of the Yukon Territory, considerable progress has been made in completing plans that were begun in the preceding year. Practically all the Stewart river basin to the south and east of Dawson has now been covered.

Besides the subdivision of land, the examination of surveys comprises many other important branches of work including the Alberta-British Columbia boundary, the Government inspection of surveys and surveying parties, the writing of descriptions of mineral claims for transfer to the province of British Columbia, the examination of plans of new roads and road diversions surveyed by the western provinces across Dominion lands and of plans of railway right of way across Dominion lands, and the answering of requests for information concerning surveys from other branches of the department and from the general public.

DRAFTING AND PRINTING DIVISION.

Township Plans.

The preparation for printing of plans of townships still constitutes the most important work of this division, and takes up a large part of the time. The method of printing has not changed materially since the old style of coloured plans was discarded, and the present plan in black and white adopted. However, frequent minor changes have been made from time to time in the amount and character of the data shown on the plans, these changes usually being the result of changes either in the method of survey or in the manner of showing the data returned by the surveyor. The latest change of this character relates to the abbreviations describing monuments. This particular change is important to the drafting division inasmuch as it renders many of the old fair copies useless for printing new editions.

The stamping or typing of township plans is done largely by temporary men employed as required. At the outbreak of the war in August, 1914, several of these men went to the front, and from time to time others have enlisted until now five are away. The policy of the department has been to curtail expenditure and so the places of men absent from the above cause have not been filled. The results of this policy were not immediately apparent, but the work in arrears has been slowly but steadily accumulating. We have now 509 plans of townships in hand. During the year, 803 township plans have been prepared for printing.

Miscellaneous Surveys.—These plans include settlements, townsites, additions to townsites, subdivisions, mineral claims, timber berths, and plans of parcels of land for schoolsites, bridges, etc. Twenty-four such plans were prepared.

Surveyors' Sketch Maps.

The surveyors of base and meridian lines return explanatory sketches of the territory adjoining their lines. These are printed on a scale of 12·5 miles to an inch, with a profile of the line having a vertical scale of 2,000 feet to an inch. Formerly the character of the soil and vegetation was shown by verbal descriptions written on the map across the area described. An attempt is now being made to show this information by colours or by symbols, the general principle being to show the soil (including the state of the soil, i.e., whether wet or swampy or dry) by flat tints of colour, and to show the vegetation such as trees, grass or scrub by different symbols imposed upon the flat tints. These maps are issued with the report of the branch.

Miscellaneous Work.

Several important maps were drafted for printing. The first was a contour map of Jasper and vicinity to be printed in four sheets in four colours on a scale of 1:10,000, or 6·336 inches to a mile; the contour interval is 20 feet where slopes are steep and 10 feet in the more level portions. The map is now in the hands of the printers. The second is a somewhat similar map of the Crowsnest forest and Waterton Lakes park, Rocky Mountains forest reserve, in five sheets on a scale of 1:62,500, or 1·014 inches to a mile, with a contour interval of 100 feet. The black of both maps is engraved on copper, the other colours being printed from zinc plates made by photographing drawn copies. The second map is now in the hands of the engravers. Besides these, a number of miscellaneous jobs were done, including the preparation of plans to accompany orders in council, mounting maps and engrossing commissions and certificates for the Board of D.L.S. Examiners.

Sectional Maps.

The stock of sectional maps for distribution is in charge of this division, as the room in which they are stored is conveniently situated to the drafting room. The work consists in giving out the maps as required and in taking steps to see that the stock is reprinted before it is exhausted. As there are now 120 sectional maps printed in two weights of paper and on two scales, it requires care to see that the stock of each map is complete.

BRITISH COLUMBIA SURVEYS DIVISION.

The work of this division consists in the examination of surveyors' field notes and plots, the compilation of township, townsite, and miscellaneous plans, the comparison of the rough and fair copies of these plans and the replying to requests for various information.

Some of the field books, prepared during the last fiscal year for the use of surveyors in the railway belt, British Columbia, have been received, but at the close of the present fiscal year none of them had been examined, although a casual examination indicates that the time required will be greatly in excess of that necessary for the examination of the old field books.

The new system of compiling township plans, whereby the name of the surveyor is placed at each monument and an amended system of abbreviations used, necessitates the search of all field books appertaining to each plan, and entails, at a conservative estimate, five times the length of time for compiling that was required for the compilation of plans under the old system.

SECTIONAL MAP DIVISION.

The chief work of this division continues to be the compilation and revision of the sheets of the sectional map of western Canada. These "sectional maps," as they are briefly called, first received official mention in the Report of the Department of the Interior for 1892. The reference is on page 5 of the Report of the Surveyor General for that year, and is as follows:—

> "A record of all surveys made has hitherto been kept by compiling them on a scale of six miles to one inch on diagrams printed for the purpose; they exhibit at any time the state of the surveys in any part of the country. This scale has been found too small for the many miscellaneous surveys executed lately, and a change has been made to two miles to one inch. From these diagrams, maps on a scale of three miles to one inch are reproduced by photo-lithography; the progress of settlement is shown by indicating with three different tints the lands patented, those entered, and those reserved for various purposes. Each sheet makes a map of convenient size, embracing a tract of land about fifty miles by eighty. Five have been issued; they are Edmonton, Peace Hills, Calgary, Prince Albert North, and Red Deer."

Each year since 1892 some new sheets have been compiled and printed, until now the total number is 120. These form an accurate and convenient series of maps covering the country from the lake of the Woods to the strait of Georgia and from the international boundary northward to Port Nelson and Fort Vermilion.

From the first the maps were printed on a scale of three miles to one inch and their purpose was to show in convenient form the progress of the surveys of Dominion Lands. Official surveys are still shown and may be considered to form the basis of the maps, but up-to-date information is also furnished in regard to railways and railway stations, post offices, Indian reserves, forest reserves, Dominion parks, roads and trails, road diversions, etc. Latitude and longitude are given to minutes, and altitudes are given in feet above sea-level. The maps are now printed in four colours. The sheets are numbered according to a regular system, and each sheet also has a name derived from some important city or town or from some prominent topographical feature within its boundaries.

Five new maps have been compiled covering territory recently reached by the Dominion Lands system, and twenty-three of the sheets previously issued were revised. Four others are in hand.

The work of compiling new sheets is done on printed projection forms on which township and section lines are shown in faint blue. The revision of old sheets is much facilitated by the use of white prints or photographic prints of the last edition, all changes and additions being shown thereon in red. These rough sheets when completed are checked and sent to the mapping room, where finished copies are made.

In addition to the work on sectional maps, considerable time has been spent on other work, as follows:—

(1) The township reports received from surveyors from July 1, 1914, to March 31, 1915, were prepared and printed in five pamphlets, and the reports for the year ended March 31, 1916, are well advanced.

(2) Work on the series of volumes in which it is intended to include all township reports received from surveyors from the beginning of the surveys, has been continued. Three volumes containing all reports on townships west of the Principal meridian were compiled and sent to the printer. Two of these, totalling 348 pages of printed matter, have been issued, and the third is being proof-read. One volume of reports on townships west of the Second meridian is ready for the printer, and another is in hand. Owing to the decrease in the staff, the work is not now being vigorously pushed.

(3) Sketch maps submitted by base line surveyors are now printed for the annual reports on a scale of 12½ miles to the inch. On this scale the necessary descriptive notes take up a large part of the space and render the maps very cumbrous and confusing. It was thought that the necessary information could be better conveyed by using flat tints to represent the different kinds of soil and timber, and after several attempts a scheme of colours and symbols was decided upon for these maps by which the amount of printed notes is reduced to a minimum. Nine sketch maps were worked out on this basis and accompany this report in monograph form.

(4) The township index map was revised. This is a map of western Canada on a scale of thirty-five miles to one inch, which is much in use in the department for showing the progress of the surveys and other information. The extension of the Dominion Lands system of surveys into the far north has given definite information as to the location of topographical features which had formerly been shown in approximate positions. Many errors were corrected, and the map was also brought up-to-date as regards railways, etc. The time of one man for a month was required in the revision.

(5) The method of obtaining the exact location of post offices and railroad stations, begun last year, has been continued. Of the 742 diagrams sent out to postmasters, 670 have been returned and the information plotted on the sectional maps.

The other work of the division is the making of clean manuscript copies, for photo-lithography, of the compiled and revised sectional maps.

Forty-six of the revised sheets and eleven new ones have been thus copied, but fourteen of the former and four of the latter are not yet printed.

A series of maps of the boundary between British Columbia and Alberta, as defined by the Interprovincial Boundary Commission are being prepared but are not yet completed.

SPECIAL SURVEYS DIVISION.

Base Line Surveys.

An examination of the returns of survey of all base lines and meridians is being made. The object of this work is to determine definitely the latitudes and longitudes of the monuments on the governing lines of the Dominion Lands surveys and, where possible, to correct the positions of any monuments originally established in error. For the requirements of the new surveys the determination of the latitudes of monuments already established has been more urgent than that of the longitudes and for this reason the greater proportion of this work so far has been given to determining their positions in latitude.

In conjunction with this work, two surveyors have been employed in the field, one in making retracements, and the other in taking latitude observations. Since 1910 latitude observations with the large zenith telescope have been taken at twenty-two points in the Dominion Lands surveys system. Of these, ten determinations were made in 1915. After being carefully checked over, the results of all the observations taken were applied to ascertaining the latitudes of monuments already established on base lines and meridians. In the application of these to the surveys it has been found that, in consequence of local attraction, a very appreciable difference exists at a number of the observation stations between the astronomic and the geodetic values for the latitude. It was therefore necessary to combine the results obtained at the various stations by connecting them by reliable survey lines, thus

forming, as nearly as the accuracy of the line surveys will permit, a common datum to replace individual astronomic values. From this datum the latitudes of all other corners on base lines and meridians have been derived. In this way also it has been found possible to determine approximately the magnitude and direction of the local attraction at those latitude stations where the attraction is large. The accuracy of such determinations cannot be claimed to be closer than two chains. Owing to the great areas covered by the surveys, a limited number of latitude stations must necessarily be widely scattered, and the connecting line surveys over the long distances between stations have not the accuracy required for detecting the smaller local attractions. At six stations out of twenty-two, differences of two chains or more in latitude have been caused thereby. The particulars of these are as follows:—

Location of latitude station.	Astronomic value of latitude.	Geodetic value of latitude.	Difference.
1. NE. cor. sec. 13, tp. 57–1–3.....	53°56′01″·77	53°55′59″·66	3·25 chains.
2. " 13, " 24–1–5.....	51°03′10″·94	51°03′09″·49	2·23 "
3. " 1, " 80–1–6.....	55°54′43″·13	55°54′47″·38	6·53 "
4. " 12, " 69–1–3.....	54°52′47″·21	54°52′43″·35	5·94 "
5. ¼ " 32, " 60–21–W.....	54°14′25″·97	54°14′22″·26	5·70 "
6. NE. " 36, " 32–1–2.....	51°47′44″·99	51°47′43″·04	2·47 "

At the remaining sixteen stations smaller variations than two chains occur.

With the exception of a few lines in the vicinity of the Rocky mountains, and a few other lines which have been noted for retracement, the latitudes of all corners on base lines have been definitely determined. Plans have been prepared showing the positions of the monuments relatively to their theoretic positions, and also with respect to sea-level. This has entailed a very large amount of work. The returns of survey for over 20,000 miles of lines required examining, and to do this satisfactorily the records for as many more lines other than the governing lines for the purpose of providing checks on the work. Deflections in the lines were carefully calculated from the bearings returned in the field notes after the azimuth observations had been checked, and closings calculated and compared with computed theoretic values. From the returns of the levelling operations the elevations of the various lines above sea-level were ascertained, and for these elevations the required corrections to distances were computed and applied. On the older survey lines no levels had been taken, and information respecting elevations thereon had to be gathered from other sources. The required corrections, however, were in all cases applied. The corrected values for the various portions of all the lines were finally transferred to the plans being prepared and each base line given the latitude thereon which represents its actual position on the ground. When the first draft of the plans was completed the surprise came. The wonder is, not that some errors were found, but that the surveys fit together as well as they do, when the immense areas they cover are considered. Much work yet requires to be done before the longitudes of all corners are ascertained with the same accuracy as the latitudes.

Associated with the work of determining the latitudes and longitudes of monuments on base lines and meridians, is the work of determining the position of monuments erroneously established, registering the corrections required and by whom and when these corrections are made; computing closings and widths of fractional ranges for new base lines to be surveyed; drafting instructions for the surveys of base lines, initial meridians, lines requiring retracement, and for the taking of latitude observations, and in general those matters relating to the control of the governing lines of the Dominion Lands surveys system.

Astronomical Work.

Azimuth Observations.—The observations for the azimuth of base lines and meridians surveyed during the season 1914-15 have been examined and have shown the same high degree of accuracy as those of the previous season. About twelve hundred observations were checked and the bearings of over twelve hundred miles of original line and a thousand miles of retracement survey were compared with these results. The field notes show a very small error to be left in the line, the mean deviation from theoretic being less than six seconds; and as this error may be positive or negative the resultant error in the line is extremely small. The observations have been taken frequently enough to give good control of the line, the average distance between stations being less than five miles. While most of the surveyors follow the instructions in the Manual to observe every four miles or thereabouts, some have failed to observe with this frequency, thus bringing the average considerably above four miles. All follow fairly well the practice of taking two or more observations at a station. Deflections are seldom made on the strength of a single observation, and then only when weather conditions prevent the completion of a set. During the season only four such cases occurred. Other single observations were used merely as checks on other observations, or in cases where the conditions of running the line made it reasonably certain that the bearing was practically theoretic. The practice of taking single observations is not approved, as they give no idea of the accuracy of the observing and recording. When two or more observations are made at a station, the difference between the extreme values, that is the range of the results, is some indication of this accuracy. The average range for the season's work was less than ten seconds, and one observer had the remarkably low average of 4″3.

In order to give the surveyor the benefit of criticisms suggested by his work, an effort is now made to have the observations checked and reported on before his return to the field for the next season. He can thus see in what respects his observing can be improved. Because of the reduced staff, only a small part of the work for the season 1915 has as yet been examined, but this portion shows the benefits of this course.

Latitude Observations.—One surveyor was engaged in latitude work and took ten observations with the zenith telescope. One on the Third meridian at township 68 was taken before the ice broke, and the others during the summer season. Of these, two were on the intersections of the Hudson Bay railway with the Principal meridian and the 16th base line west of the Principal meridian; four were in the vicinity of the Principal meridian in township 26, range 9, east, on the 5th base in range 7, east of the Principal, on the 8th base in range 5, east of the Principal, and on the 10th base in range 5, west of the Principal; three were on the 9th base at its intersections with the Second, Third and Fourth meridians.

The Catalogue of Stars published by this office was used and proved a great convenience. It is mentioned in the introduction that the positions of the Ambronn stars are not considered as accurate as those of the other catalogues. This was clearly shown in the results of the latitude observations for this year. The average probable error of the first four observations, in which Ambronn stars were used, was ±0″049, while that of the last six, in which they were not used, was ±0″032. A similar improvement was shown in the probable error of a single observation due to observing and declination, which was ±0″46 in the first four, and ±0″29 in the last six. As the probable error due to observing alone is almost the same in both cases, this difference must be due to declination errors. Also, of the nineteen pairs rejected, two containing G5039 were rejected because of declination errors, three were observed under unfavourable conditions, and the other fourteen, consisting of eight different pairs, contained Ambronn stars. It is thus seen that the exclusion of Ambronn stars increases the accuracy of the results.

Astronomical Field Tables.—The Star tables for November and December, 1916, September and October, 1917, and July and August, 1918, and for January, February, and March, 1917, and April, May and June, 1918, and the tables for the right ascension and the declination of the sun for 1917 have been compiled and printed. For the Star tables, owing to the continual motion of Polaris, it became necessary to compute new primary tables. These were type-written and then photographed on forms suitable for the computation of the field tables. The right ascension and the declination of the sun are now given in the same folder with a table for the sun's refraction and parallax. This table is given with the apparent altitude as argument, and contains the combined amount of refraction and parallax, and the corrections to this for barometric pressure and temperature.

Magnetic Survey.

Sixty-two surveyors were instructed to observe for magnetic declination, and during the surveys made by R. C. Purser, D.L.S., and C. M. Walker, D.L.S., observations for magnetic dip and total force were taken at twenty-five stations. The results are given in Appendix 72. The instrumental constants of the dip circles as determined at Agincourt both at the beginning and end of the survey season show a probable error of less than 0·00010 c.g.s. in each case from the mean of at least six observations. At every station a complete observation for magnetic dip and total force, consisting of a dip, a total force and a dip was taken. This observation was always duplicated and the average range found to be comparatively small.

The index correction to the compass of every transit used for observing was determined both at the beginning and end of the survey season. If the change was small the mean correction was used in the reduction of the observations. If a serious discrepancy was found between the two determinations it was investigated, and if the discrepancy could not be satisfactorily explained the observations taken with the instrument were rejected. Every observation for magnetic declination has been reduced, checked, and plotted on a large-scale map. They have been reduced to the mean of the month in which they were taken by means of the daily records of the declinometer at Agincourt, except those that were taken at times when the records were not observed. In the appendix such observations are marked with an asterisk.

In the reduction of the observations to a common epoch, we are handicapped by the absence of a magnetic observatory in the northwest. Agincourt is too remote from the territory covered by our observations. There is no surety that the daily variation at Agincourt and at, say, Edmonton, is always the same or that all magnetic disturbances felt at Edmonton are recorded at Agincourt, and *vice versa.* For this reason we have been anxious for some years now to have the Meteorological Service start a magnetic observatory in the Northwest. The only equipment necessary for our requirements is a self-recording declinometer. The director of the service has the instruments but has experienced difficulty in getting a competent observer. It is hoped that the observatory will be in operation for the summer of 1916.

Returns received for 1915	2,147
Previous returns since 1908	6,853
Total returns to date	9,000
Dip observations received for 1915	85
Previous returns since 1908	351
Total force observations for 1915	59
Previous returns since 1908	260

Surveying Instruments.

As in the previous year, the instrumental equipment of the surveyors employed in the field was listed and, where thought advisable, inspected so that the office might

be satisfied that only instruments in good condition and of approved pattern were being used on the surveys. It has been found that unless this is done there is a tendency among some surveyors to use instruments which are worn out and no longer fit for service.

Repairs were made to ninety transit theodolites, nineteen dumpy levels, twelve surveying aneroids, six surveying cameras, two abney levels, two recording thermometers, five stadia rods, eighty-five rod levels, and fifteen tripods.

Twenty-five sidereal watches were sent away to be overhauled and readjusted.

To give an idea of the volume of work in connection with the instruments, it may be stated that 455 cases of surveying instruments aggregating ten tons (20,054 pounds) were shipped from this office during the past year, and 179 cases aggregating 1½ tons (7,789 pounds) received.

A statement of the surveying instruments on hand on March 31, 1916, showing also the instruments purchased and sold during the year is given in Appendix 74.

General Work.

The Supplement to the Manual has been revised and the tables carefully checked by an independent computation. Two of the tables have been extended, and three which are not now used have been omitted. The text has been completely revised, and parts which had become out of date have been rewritten. There has also been added full descriptions of the astronomical and magnetic observations which are required of Dominion Land surveyors, and how they may best be taken. This matter formerly appeared in part in the Manual. New specimen observations have also been prepared.

An illustrated pamphlet has been prepared on the block survey transit describing and explaining the use of the specimen observations for azimuth, latitude, etc. The explanations are mostly those peculiar to this instrument, and not readily obtainable in text-books. The subject is covered fully, and the instructions with illustrations and sectional cuts afford a ready and comprehensive reference for the surveyor in the field. This pamphlet is now in the press.

In the rough mountainous country of the British Columbia railway belt a considerable amount of the surveyors' and assistants' time is taken up in computing the corrections required to reduce the distances chained on the slope to the horizontal. In the prairie provinces of Manitoba, Saskatchewan, and Alberta the surveyors use slope correction tables issued in convenient card form by this office for their reductions. But these tables are not sufficiently complete nor extended far enough for the steep slopes encountered in British Columbia, and it has been the practice of nearly all, if not all, the British Columbia surveyors in the past to use either natural or logarithmic tables to compute these corrections. Last year, specially complete and extended slope correction tables were computed, printed, and issued for the British Columbia men. This year, to further facilitate their work, "slope correction slide rules" have been designed and issued to them. These slide rules are simply the standard ten-inch Mannheim slide rule with a scale of versines in place of the usual scales of logarithms and tangents. Slope corrections for distances up to five chains and for slopes up to twenty-six degrees can thus be taken out with an accuracy of one-tenth of a link. The use of the rule is further extended by the addition of another standard number scale on its face, by which the difference of elevation in feet is given simultaneously with the slope correction. The rule has been very favourably received by the surveyors.

On stadia and other traverses it is often rather difficult to locate survey posts upon which it is desired to tie or check. A general idea of the locality of the post sought for is afforded by roughly calculating the latitudes and departures of the lines. A rapid, approximate method of making these calculations is supplied by an

abacus which has been designed for this purpose and pasted in the back of the book for "Field Notes of Stadia Traverses."

The various methods of rapidly solving the astronomical triangle for time and altitude azimuth by means of the abacus, the homogram, the solar attachment, tables, etc., are under investigation. It is hoped that this interesting matter will be available for publication in the near future.

Surveys Laboratory.

Complete tests were made of twenty-six D.L.S. subdivision transits, four hydrographic survey transits, eight survey cameras, six clinometers, ten telescopes, four micrometers, two binoculars, and one monocular. Partial tests were made of seventy-one subdivision transits.

A complete analysis was made of the graduations of the horizontal circle of one of the base-line transits. This consisted of the determination of the eccentricity and ellipticity of the pivot, the periodic and accidental errors of graduation, the probable errors of the microscopes, of the graduations, etc.

Forty-one sidereal watches and five mean-time watches were submitted for trial, and forty-two of these passed through complete tests; the remaining four were withdrawn before the tests were finished.

Of the forty-two completely tested watches, thirty-two were put through the Surveys Laboratory test of forty-four days, eight passed the test and were then tested for fifty-five days according to the Bureau of Standards method, and ten were tested according to the Bureau method only.

Of the thirty-two watches completing the Surveys Laboratory test, twenty-one, or sixty-six per cent, passed as against thirty-nine per cent in 1915. Of the eight subjected to both tests, five passed and three failed the Surveys Laboratory test, and one passed and seven failed the Bureau of Standards test. Of the ten completing the Bureau of Standards test only, seven passed and three failed.

The results of the trials of the watches which passed are given in Appendix 73.

For the twenty-one which passed the Surveys Laboratory test, the average errors for isochronism were as follows:—

P.U.	P.R.	P.L.	D.U.	D.U.	D.U.	D.D.	P.U.
0s.49	0s.39	0s.52	0s.60	0s.41	0s.34	0s.41	0s.76

The smallest error for α was 0s.23.

The average errors for position were

P.U.	P.R.	P.L.	D.U.	D.D.
2s.76	2s.73	2s.19	1s.35	1s.53

The smallest error for β was 0s.75.

The average temperature coefficient was 0s.09.

Comparing the average errors with those for 1915 we have the following:—

	1915.	1916.
Average error for isochronism..	0s.53	0s.49
— " position..	1.89	2.08
" compensation..	0.08	0.09

The largest average error in isochronism for both those which passed and those which failed was, as in 1914, in the P.U. position. The lowest average error for those which failed was, as in 1914 and 1915, in the D.D. position, but for those which passed it was in the D.U. position.

In position, the largest average error for those which passed was, as in 1914 and 1915, in the P.L. position.

Of the watches which failed, four, or thirty-six per cent, failed in isochronism, nine, or eighty-two per cent, in position, and two or eighteen per cent in both isochronism and position.

All passed the test for temperature of compensation.

In connection with the testing and rating of the watches, thirty-eight time observations were taken.

One hundred and fifty stadia cards were computed, printed, and issued to the surveyors.

At the Comparator building, the base was verified seventy-one times by the standard four-metre rule, eighty intercomparisons of the laboratory standards and four hundred and twenty-nine comparisons of the standards with the base were made. Besides the above, the lengths and weights of twenty-one tapes of all kinds were determined and three elasticity tests were made.

At the Surveys Laboratory, part of a proposed electric heating system has been installed in order that the experiments may be carried on at a more nearly standard temperature during a longer period of the year than has previously been possible. Progress has continued to be made in improving the apparatus. A second testing stand has been installed for determining stadia constants, value of micrometer screws, etc., so that during busy periods instruments may be turned out at a much faster rate. Work at the Surveys Laboratory, however, is becoming very much handicapped by lack of space. The main room in which the greater portion of the tests are carried on is but eleven feet by sixteen feet, and quite inadequate for the amount of apparatus installed therein and is very cramped when more than two observers are working at the same time on different tests.

PHOTOGRAPHIC OFFICE.

Owing to the reduction in our staff due to the absence of one member, who is on active military service, and to other unusual conditions, the output of the photographic office shows a small decrease.

To avoid procuring extra assistance, as much as possible of the blue-and-black-line printing was sent to the Railway Lands Branch, where special equipment for doing such work expeditiously is installed. The remainder, such as prints from glass-line negatives, were made, for the time being, by the process photographers.

However, additional work such as developing some hundreds of photographic dry plates used in topographical survey operations, more than made up for the work sent out.

The plates used for this kind of work in the past have been of the ordinary or colour-blind variety, but this season Panchromatic plates were used; these, being sensitive to all colours, had to be very carefully handled, that is, the loading into the plate holders and, after exposure, unloading and packing for shipment, had to be done in the dark.

The plates were developed in tanks by the time-and-temperature method, a fixed time of development at a known temperature, say thirty minutes at sixty-five degrees, plates not being looked at till after fixing. The manipulations were, of course, in darkness or practically so.

Although this make of plates was new to us and to the surveyors in the field, the results were good; with further experience both in exposing and developing, they ought to be very satisfactory.

From these and many hundred other survey negatives, which were not developed at this office, contact prints and enlargements were made, the enlarged prints being used in plotting the survey.

To turn out all this so as not to cause any delay to the various survey parties in plotting their work, and at the same time attend to the other duties of the office, kept our small staff fully occupied, some of the less important work, such as bringing our office albums up to date, being held over.

The fixed focus enlarging camera on which all the survey enlarging is done, and which had been rebuilt in preparation for this season, has proven very satisfactory. It is more compact, more convenient to handle, and the definition of the enlarged print is better than with the old camera. One of the staff attended the Kodak Photographic School held at Montreal for three days. Much valuable information pertaining to photography in general was secured, which will be of benefit in future work.

PHOTOLITHOGRAPHIC OFFICE.

The duties of this office are to prepare photo-lithos on zinc and aluminum of maps, plans, etc., for the power printing presses, and also the making of reductions and enlargements for the convenience of the drafting division.

These photo-lithos are made from drawings in black drawing ink, prepared by the drafting, division. First a negative is made and then carefully retouched, spotting out all defects and correcting any errors. A sheet of specially grained zinc is coated with a sensitized solution, and when dry is exposed to the light, when it is then inked in. This is developed under running water, dried off with a fan and sent to the press for printing.

During the past year over one thousand township plans have been put through in this manner, together with three- and six-mile sectional maps and various forms of townsites and other plans.

Some of the higher-class maps published in this office are first engraved on copper. Experiments are now being carried on in copper-plate intaglio etching to take the place of these plates at a reduced cost.

There is a slight decrease in the number of negatives this year compared to last year, but a greater number of the larger size were made.

We are now prepared to copy coloured maps, and other documents by the aid of panchromatic plates and coloured filters.

BOARD OF EXAMINERS FOR DOMINION LAND SURVEYORS.

The Board of Examiners for Dominion Land Surveyors held three meetings. The first was a special meeting lasting from May 3 to June 25 (inclusive), 1915, during which examinations were held at Ottawa, Toronto, Winnipeg, Calgary, and Dawson. The second was another special meeting which took place on September 24, 1915. The third was the regular annual meeting called for by section 9 of the Dominion Lands Surveys Act. It began on Monday, February 14, 1916, and lasted until March 31, 1916. During this meeting examinations were held at Ottawa, Toronto, Montreal, Kingston, Winnipeg, Calgary, Edmonton, Vancouver, and Dawson. The total number of candidates for examination was 202. Of these, 144 tried the preliminary examination, 55 tried the final examination, and 3 tried the examination for Dominion topographical surveyor.

Thirty-seven candidates were successful at the preliminary examinations as follows:—

PRELIMINARY EXAMINATION.

Atkins, Samuel Clements, Ottawa, Ont.	Dalglish, Bruce M., Ottawa, Ont.
Atkinson, Nelles Henry, Calgary, Alta.	Davis, Vernon R., Franklin, Man.
	Dewar, Charles Leonard, Ottawa, Ont.
Bayly, Gilbert St. John, Rocky Mt. House, Alta.	Dunbar, John Robert, Ottawa, Ont.
Berton, Francis George, Dawson, Y.T.	
Boyle, Joseph Whiteside, Dawson, Y.T.	Elliot, Herman James, Toronto, Ont.
Breen, Joseph Melville, Long Branch, Ont.	Evans, William Lloyd, Hamilton, Ont.
Brennen, James Hugh, Ottawa, Ont.	
Brennen, Herbert, Ottawa, Ont.	Gordon, Donald Cameron, Ottawa, Ont.
Chisholm, Austin Joseph, Woodstock, Ont.	Henderson, John Archibald Hamilton, Ottawa, Ont.
Cole, Arthur William Willoughby, Ottawa, Ont.	
Cunningham, Frederick J., Ottawa, Ont.	Hogarty, Bertrand, Portage la Prairie, Man.

PRELIMINARY EXAMINATION—*Concluded.*

Huggins, Frank William, Ottawa, Ont.
Hurlbert, Bernard Hatfield, Tusket, Yarmouth Co., N.S.

Moorehouse, Edmund Lloyd, Medicine Hat, Alta.

Ogburn, Robert Henry, Dawson, Y.T.

Pearson, Grant Price, Schomberg, Ont.

Read, Hiram Earle, Edmonton, Alta.
Robertson, Douglas Mills, Edmonton, Alta.

Rochester, Bertram Cole, Ottawa, Ont.
Rose, Hugh Grant, Ottawa, Ont.

Scott, Cecil Raymond, North Bay, Ont.
Stewart, James R., City View, Ont.

Thompson, William Kirk, Toronto, Ont.
Thomson, Alexander Muir, Ottawa, Ont.

Wadge, Harold, Regina, Sask.
West, Gordon O., Ottawa, Ont.
Williams, Howard J., Kingston, Ont.
Wood, George H., Kincardine, Ont.

Twenty-seven candidates were successful at the final examination as follows:—

FINAL EXAMINATION.

Ball, Alfred Nepean, Grenfell, Sask.
Britton, George Clayton, Whitby, Ont.

Carroll, John, Toronto, Ont.
Clouston, Noel Stewart, Winnipeg, Man.
Cram, Alexander Scott, Westboro, Ont.

Davidson, R. Douglas, Port Rowan, Ont.

Fullerton, James Thornton, Victoria, B.C.

Gardner, James David, Ottawa, Ont.

Keeping, Kimball, Murray Harbour, P.E.I.
King, Arthur Harry, Maitland, N.S.
Knight, Sidney, Edmonton, Alta.

McIntosh, John Stuart, Morrisburg, Ont.
McLaren, Arthur Anthony, Mitchell, Ont.

MacTavish, William Higgins, Van Camp, Ont.
Mills, Thomas Stanley, Kingston, Ont.
Murdie, William Campbell, Seaforth, Ont.

Phillips, Edwin Percy Aryall, Oshawa, Ont.

Riddell, John Morrison, Toronto, Ont.
Robinson, Edward Keith, Kingston, Ont.

Sauder, Penrose Melvin, Calgary, Alta.
Sibbitt, William Algernon, Bracebridge, Ont.
Smith, Leonard Ross, Richdale, Alta.
Stewart, Alan D., Ottawa, Ont.

Thomas, Llewellyn Olding, Ottawa, Ont.

Wight, Edmund James, Ottawa, Ont.
Wood, Norman C., Kamloops, B.C.
Wood, James Russell, Peterboro, Ont.

The time of the board, during the meetings, was largely taken up with the reading and valuation of the candidates' answer-papers. Complete sets of question-papers, to be used at the next examination, were also prepared. In addition to this, the evidence submitted by candidates at the final examination, in proof of their eligibility therefor, had to be examined. This evidence consisted of certificates of Provincial land surveyors, and of affidavits of service under articles of apprenticeship.

Nine candidates who presented themselves for final examination, had not quite completed their time under articles. They were admitted on the understanding that in case they were successful, their commissions would not issue until they had completed their apprenticeship and furnished affidavits in the regular form.

The board had to consider several applications which were received from college and university graduates asking to be admitted to the privileges of section 22 of the Surveys Act which provides for a shorter term of service under articles. One candidate who produced a diploma from McGill University, showing that he had successfully passed the third-year examination in civil engineering, was admitted to the shorter term of service.

Thirty commissions were issued to candidates who had passed the final examination, and had furnished oaths of office and allegiance and bonds for the sum of one thousand dollars, as required by section 25 of the Dominion Lands Surveys Act.

Twenty-seven certificates of preliminary examination were issued to successful candidates who had complied with the requirements of the law.

Section 35 of the Dominion Lands Surveys Act provides that every Dominion Land surveyor shall be in possession of a subsidiary standard of length. During the year, twelve new standards were issued to surveyors. Two Ontario Land surveyors,

who were also Dominion Land surveyors, sent their O.L.S. standard measures to be tested. These being in good condition and of the same pattern as the Dominion standard, they were tested at the Surveys laboratory and re-issued as subsidiary standards of length.

Under the provisions of section 53 of the Dominion Land Surveys Act, the following fees must be paid to the secretary by each candidate who has successfully passed the examination for admission as a Dominion Land Surveyor:—

(*f*) By each applicant obtaining a commission, two dollars;

(*g*) For admission to practise after receiving a commission, twenty dollars.

Hitherto, the secretary had collected the two fees (*f*) and (*g*) on the issue of the commission, which was considered to be the "admission to practise." In March last, however, the Deputy Minister of Justice advised that the right to a commission and the right to practise are two separate things, for which separate fees are payable. As no surveyors apply for admission to practise, the collection of the fee of twenty dollars, (*g*) has practically ceased.

APPENDICES.

No. 1.—Schedule of surveyors employed and work executed by them.

No. 2.—Schedule showing for each surveyor employed, the number of miles surveyed of section lines, township outlines, traverses of lakes and rivers and resurvey, also the cost of the same.

Nos. 3 to 71.—Abstracts of reports of surveyors employed.

No. 72.—Results of magnetic declination.

No. 73.—Results of watch trials.

No. 74.—List of surveying instruments on hand, March 31, 1916.

MAPS AND PROFILES.

The following maps accompany this report:—

Index to townships in Manitoba, Saskatchewan, and Alberta to illustrate progress of Dominion Lands surveys, sketch maps and profiles of meridians and base lines.

I have the honour to be, sir,

Your obedient servant,

E. DEVILLE,
Surveyor-General.

NOTE.—Appendices Nos. 3 to 74 and the maps accompany the report of the Topographical Surveys Branch in monograph form.

TOPOGRAPHICAL SURVEYS BRANCH.

SCHEDULES AND STATEMENTS.

Appendix No. 1.

SCHEDULE of Surveyors employed and work executed by them.

Surveyor.	Address.	Description of Work.
Akins, J. R.	Ottawa, Ont.	Production of the Sixth meridian from the NE. cor. tp. 90 to the NE. cor. sec. 12, tp. 127; the 27th base line from the NE. cor. sec. 33, tp. 104-22-5, to the Sixth meridian; and the 30th base line across part of range 1, west of the Sixth meridian. Resurvey of the 29th base line across range 24, west of the Fifth meridian.
Aylsworth, C. F.	Madoc, Ont.	Retracement in tp. 12-10-E., tps. 24 and 25-27-Pr., tp. 26-30-Pr., and tps. 23, 28 and 29-31-Pr. Resurvey of the north outline of tp. 12-9-E. Stadia surveys in tp. 23-27-Pr. and tps. 24 and 25-28-Pr.
Baker, J. C.	Vermilion, Alta.	Subdivision of tp. 94-10-4, tps. 94 and 96-11-4 and parts of tps. 95 and 97-11-4. Traverse in tp. 95-10-4.
Baker. M. H.	St. Thomas, Ont.	Resurvey in tp. 17-11-E., tp. 4-17-Pr., tp. 24-2-2, tp. 28-18-2, tps. 30, 31 and 38-26-2, tps. 30 and 31-27-2, tps. 30 and 31-28-2, and tp. 28-7-3. Retracement in tp. 25-22-Pr., tp. 44-25-Pr., tps. 1 and 2-8-2, tps. 1 and 2-9-2, and tp. 22-23-2. Correction survey in tp. 37-26-Pr., tp. 19-8-2, tp. 7-10-2, tps. 24, 25 and 27-24-2, tp. 40-26-2, and tp. 51-3-3. Survey of parcel of land for water-power reservation in sec. 22 tp. 15-12-E. Survey of portions of the old Dawson road in tp. 8-6-E., tp. 8-7-E. and in the parish of Ste. Anne des Chênes. Survey of agricultural land in tp. 15-4-Pr. and of cemetery in sec. 17 tp. 5-27-2. Traverse of road along the north shore of Arcola lake in sec. 24 tp. 10-3-2. Resurvey of lots 19 and 20 in Fairford settlement, and of blocks 4 and 11 at Wymark, sec. 29 tp. 13-3-3.
Bélanger, P. R. A.	Ottawa, Ont.	Resurvey of part of Lac la Biche settlement. Subdivision in tp. 67-13-4. Correction survey in tp. 67-13-4 and tp. 67-15-4.
Bennett, G. A.	Tillsonburg, Ont.	Stadia surveys in tps. 34 and 35-6-3, tp. 32-13-3, tp. 32-14-3, tp. 31-15-3, tps. 34, 36 and 37-16-3, tps. 31, 32, 33, 34 and 36-17-3, tps. 29 and 31-18,3, tps. 27 and 30-19-3, tps. 27 and 28-20-3, tps. 27, 28 and 29-21-3, tps. 27 to 30-22-3, tps. 27 to 36-23-3, tps. 31 to 36-24-3, tps. 31 to 36-25-3, tps. 31 to 37-26-3, tps. 31 to 36-27-3, tps. 31 to 37-28-3, and tps. 31 to 36-29-3.

SCHEDULE of Surveyors employed and work executed by them—*Continued*..

Surveyor.	Address.	Description of Work.
Blanchet, G. H.	Ottawa, Ont.	Survey of the east outlines of tp. 37 and part of tp. 38-3-E., tps. 33, 34, 35 and 36-6-E., tps. 29, 30, 31 and 32-7-E., and tps. 27, 28 and part of tp. 26-9-E., and the north outlines of tp. 36-4-E., tp. 36-5-E., tp. 36-6-E., part of tp. 32-6-E., tp. 32-7-E., part of tp. 29-7-E., part of tp. 28-5-E., tp. 28-6-E., tp. 28-7-E., tp. 28-8-E. and tp. 28-9-E.
Boulton, W. J.	Wallaceburg, Ont.	Stadia surveys in tp. 13-15-4, tps. 13 and 14-16-4, tp. 14-17-4, tps. 12, 13 and 14-18-4, tps. 6, 7 and 11 to 14-19-4, tps. 6 to 14-20-4, tps. 7 to 15-21-4, tps. 8, 9 and 12-22-4, tp. 18-28-4, tps. 18, 19 and 24-29-4, and tp. 24-1-5. Retracement in tp. 13-17-4.
Bowman, E. P.	West Montrose, Ont.	Stadia surveys in tps. 45, 46 and 47-10-3, tps. 45 and 46-11-3, tps. 42, 43 and 44-13-3, tp. 51-14-3, tps. 50 to 52-15-3, tps. 50 to 53-16-3, tps. 46 and 50 to 53-17-3, tps. 48, 49 and 51 to 53-18-3, tps. 48 to 52, 54 and 55-19-3, tps. 49 to 55-20-3, tps. 49 to 52 and 54-21-3, tps. 51 and 52-22-3, tp. 51-23-3, tps. 50 and 51-24-3, tps. 49 and 50-25-3, and tps. 49 and 50-26-3.
Brenot, L.	Ottawa, Ont.	Part subdivision of tps. 82, 83 and 84-17-6, tp. 84-22-6, tp. 83-23-6, tp. 83-24-6, and tp. 82-25-6. Survey of the east outlines of tps. 83 and 84-26-6. Traverse in tp. 85-17-6.
Bridgland, M. P.	Calgary, Alta.	Photo-topographical survey and triangulation in Jasper Park.
Brownlee, J. H.	Dawson, Y.T.	Mineral claim, base line and miscellaneous surveys in the Yukon Territory.
Buchanan, J. A.	Edmonton, Alta.	Subdivision of tps. 91 and 92-20-5 and tps. 90, 91 and 92-21-5.
Calder, J. A.	Lytton, B.C.	Subdivision in tp. 22-21-6, tp. 15-23-6, tps. 15, 16 and 20-24-6, tp. 22-25-6, tps. 19, 20 and 21-26-6, and tp. 18-28-6. Traverse in tps. 15, 16 and 20-24-6, tps. 19, 20 and 21-26-6, tp. 22-21-6 and tp. 22-25-6.
Christie, W.	Prince Albert, Sask.	Subdivision of tp. 53-21-2 and tp. 53-24-2. Part subdivision of tp. 53-20-2, tp. 52-21-2, tps. 53 and 54-22-2, tp. 54-23-2 and tp. 54-24-2. Retracement of the 15th base line across ranges 22 to 27, west of the Second meridian. Survey of Red Rock mineral claim in sec. 21, tp. 49-25-2.
Coltham, G. W. (Owing to illness of Mr. Coltham, charge of party was later transferred to E. S. Martindale.)	Aurora, Ont.	Stadia surveys in tp. 43-28-3, tps. 42 and 43-1-4, tps. 43 and 44-2-4, tps. 43 to 45-3-4, tps. 43 and 44-4-4, tps. 43 to 46-5-4, tps. 43 to 46-6-4, tps. 43 to 46-7-4, tp. 45-8-4, and tps. 44 and 45-9-4.
Coté, J. M.	Ottawa, Ont.	Resurvey of tps. 43 and 44-2-3, tp. 47-22-3 and tp. 27-27-3. Miscellaneous surveys in tp. 41-23-2, tp. 43-27-2, tps. 43 and 45A-28-2, tp. 40-14-3, tps. 30 and 31-21-3, tp. 51-23-3 and tp. 27-28-3.
Cowper, G. C.	Welland, Ont.	Stadia surveys in tps. 17 and 19-7-3, tps. 15 to 19-8-3, tps. 15 to 19-9-3, tps. 15 to 19-10-3, tps. 15 to 18-11-3, tps. 15 to 18-12-3, tps. 16 to 20-13-3, tps. 16 to 20-14-3, tps. 15 to 21-15-3, tps. 12 to 21-16-3, tps. 13 to 17 and 19 to 22-17-3, tps. 9, 10, 12, 14 to 16 and 18 to 22-18-3, tps. 8 to 10, 16 and 18-19-3, tp. 6-20-3 and tp. 6-21-3.
Cumming, A. L.	Cornwall, Ont.	Subdivision of tp. 41-10-5, part subdivision of tp. 41-9-5, tp. 39-10-5, tps. 39 and 40-11-5. Retracement in tp. 40-10-5.
Davies, T. A.	Edmonton, Alta.	Subdivision of tps. 80, 81, 83 and 84-5-6, the west half of tp. 82-5-6 and the east third of tp. 80-6-6.

SESSIONAL PAPER No. 25

SCHEDULE of Surveyors employed and work executed by them—*Continued*..

Surveyor.	Address.	Description of Work.
Day, H. S.	St. John West, N.B.	Subdivision of tps. 81, 82, 83 and 84-6-6.
Deans, W. J.	Brandon, Man.	Inspection of surveys performed during 1915 by Messrs. W. Christie, D.L.S., O. Rolfson, D.L.S., W. A. Scott, D.L.S., and J. W. Tyrrell, D.L.S. Reinspection of contract No. 27 of 1913. Miscellaneous surveys in tp. 5-9-E., tp. 24-6-E., tp. 21-5-Pr., tps. 20 and 21-6-Pr., tp. 20-7-Pr., tp. 15-20-Pr., and tp. 13-13-3. Traverse in tp. 51-26-2.
Evans, S. L.	Corinth, Ont.	Resurvey of tp. 13-27-2. Retracement and subdivision in tp. 15-4-3, tps. 15, 16 and 17-5-3, and tp. 17-6-3. Retracement of tp. 26-8-3, tp. 26-9-3 and tp. 26-10-3. Miscellaneous surveys in tp. 13-26-2, tp. 17-1-3, tp. 32-5-3, tps. 31 and 32-6-3, tp. 25-10-3 and tps. 25 and 26-11-3.
Fawcett, S. D.	Ottawa, Ont.	Subdivision of tps. 77 and 80-16-6, tps. 77, 78 and the easterly two-thirds of tp. 80-17-6. Survey of the east outline of tp. 79-18-6. Stadia surveys in tp. 81-16-6, tp. 79-17-6 and tp. 78-18-6.
Fletcher, J. A.	Fletcher, Ont.	Survey of the 24th and 25th base lines across ranges 1 to 17 west of the Fifth meridian. Resurvey of the 24th and 25th base lines across range 25, west of the Fourth meridian.
Fletcher, W. A.	Thornton, Ont.	Stadia surveys in tp. 26-33-Pr., tp. 26-1-2, tp. 26-2-2, tp. 33-9-2, tps. 27, 31, 32 and 33-10-2, tps. 27, 28 and 32-11-2, tps. 27 and 28-13-2, tps. 27, 28 and 29-14-2, tps. 27, 28 and 29-15-2, tps. 27, 28 and 29-16-2, and tps. 28, 29 and 30-17-2.
Fontaine, L. E.	Lévis, P.Q.	Inspection of survey work performed during 1915 by Messrs. A. E. Glover, D.L.S., A. Lighthall, D.L.S., D. F. McEwen, D.L.S., and H. E. Pearson, D.L.S.
Galletly, J. S.	Oshawa, Ont.	Subdivision in tps. 59 and 60-23-Pr., tps. 58, 59 and 60-24-Pr., tp. 55-27-Pr., tp. 55-28-Pr., tp. 55-29-Pr. and tp. 56-30-Pr. Miscellaneous surveys in tps. 55 and 56-26-Pr.
Gibbon, Jas.	Vancouver, B.C.	Subdivision in tps. 3 and 4-29-6, tp. 3-30-6, tps. 1 and 2, W.C.M., and tps. 7 and 14, E.C.M. Miscellaneous surveys in tps. 17 and 22, E.C.M. Traverse in tps. 3 and 4-29-6, tp. 3-30-6, and tps. 14 and 17, E.C.M.
Glover, A. E.	Edmonton, Alta.	Subdivision of tps. 71 and 72-20-5, tps. 71 and 72-21-5, and part of tp. 72-19-5. Survey of the east outlines of tps. 69 and 70-20-5 and tps. 69 and 70-21-5.
Heathcott, R. V.	Edmonton, Alta.	Subdivision of tp. 85-24-5, tp. 85-25-5, tp. 85-26-5, tps. 83, 84 and 85-1-6, tp. 83-2-6 and the north third of tp. 82-2-6.
Herriot, G. H.	Souris, Man.	Survey of the 15th base line from the NE. cor. sec. 35, tp. 56-4-Pr. to the NE. cor. sec. 35, tp. 56-21-Pr. Resurvey of the 15th base line from the NE. cor. sec. 35, tp. 56-21-Pr. to the Second meridian. Survey of the east outlines of tps. 57, 58, 59 and 60-21-Pr. Survey of tie line between Birch Indian reserve No. 27 and tp. 56-30-Pr. and tp. 56-31-Pr.
Hubbell, E. W.	Ottawa, Ont.	Inspection of work performed during the season of 1915 by Messrs. J. C. Baker, D.L.S., R. H. Knight, D.L.S., J. W. Pierce, D.L.S., and W. H. Waddell, D.L.S. Miscellaneous surveys in tp. 91-9-4 and tp. 91-10-4.
Johnston, J. H.	Peace River Crossing, Alta.	Subdivision of tps. 83, 84, 85 and 86-19-5; part subdivision of tps. 82 and 87-19-5 and tp. 84-20-5. Stadia surveys in tp. 83-18-5 and tp. 83-19-5.

SCHEDULE of Surveyors employed and work executed by them—*Continued*..

Surveyor.	Address.	Description of Work.
Johnston, W. J..	St. Catharines, Ont.. ..	Subdivision in tp. 24-1-6, tp. 23-2-6, tp. 23-4-6, tp. 23-6-6, tp. 22-7-6, tp. 18-8-6, tp. 20-9-6, tps. 18, 21, 22 and 23-10-6, tps. 22 and 23-11-6 and tp. 22-12-6. Traverse in tp. 24-1-6, tps. 21, 22 and 23-10-6, tp. 23-11-6 and tp. 22-12-6.
Knight, R. H.	Edmonton, Alta..	Subdivision surveys in tps. 81, 83 and 84-6-4, and tps. 84, 85, 86, 87 and 88-7-4. Survey of the east outline of tp. 82-6-4. Stadia surveys in tp. 86-8-4.
LeBlanc, P. M. H.. ..	Ottawa, Ont..	Subdivision of tp. 108-5-5, tp. 107-14-5, tp. 106-15-5, tps. 108 and 109-17-5, and tp. 109-18-5. Part subdivision of tps. 102 and 103-9-5, tps. 104 and 109-10-5, tps. 108 and 109-11-5, tps. 108 and 109-12-5, tps. 104 and 108-14-5, tps. 107 and 108-15-5, tp. 108-16-5 and tp. 108-18-5. Survey of the east outlines of tps. 101 and 104-9-5, tp. 101-10-5, tp. 105-14-5, tp. 105-15-5, and tp. 105-16-5. Traverse in tp. 109-13-5, tp. 106-14-5, tp. 106-16-5 and tp. 107-17-5. Survey of Tall Cree Indian reserves Nos. 173 and 173A in tps. 102 and 103-9-5 and tp. 104-10-5.
Lighthall, A..	Vancouver, B.C..	Subdivision of tp. 65-6-5, tps. 63, 64 and 65-7-5, and tps. 61 and 62-8-5. Survey of the east outlines of tps. 63 and 64-9-5.
Lonergan, G. J..	Buckingham, P.Q.	Inspection of work performed during the season of 1915 by Messrs. L. Brenot, D.L.S., J. A. Buchanan, D.L.S., T. A. Davies, D.L.S., H. S. Day, D.L.S., S. D. Fawcett, D.L.S., J. H. Johnston, D.L.S., R. V. Heathcott, D.L.S., and G. A. Tipper, D.L.S. Miscellaneous surveys in tp. 81-21-5 and tps. 78, 79 and 80-22-5.
Martindale, E. S. .. .. (See G. W. Coltham.)	Aylmer, Ont.	Stadia surveys in tps. 44 to 48-1-4, tps. 43 to 47-2-4, tps. 42 to 48-3-4, tps. 44 to 47-4-4, tps. 46 and 47-5-4, tps. 46, 47, 48 and 54-6-4, tps. 46, 47, 53, 54 and 55-7-4, tps. 46, 47 and 52 to 57-8-4, tps. 46 to 49, 53, 55, 56 and 57-9-4, tps. 48, 49 and 56 to 60-10-4, and tps. 57, 59 and 60-11-4.
McEwen, D. F..	Hensall, Ont..	Subdivision of tp. 72-15-15, tp. 72-16-5 and tp. 72-17-5. Part subdivision of tp. 72-13-5, tp. 71-14-5, tp. 71-15-5, tp. 71-16-5 and tp. 71-17-5.
McGarry, P. J..	Merritton, Ont.	Subdivision in tps. 6 and 7-24-6, tps. 7, 8, 9 and 10-23-6, tps. 8 and 9-22-6, tps. 1 and 2-27-6, tps. 1 and 2-28-6 and tp. 1-29-6. Traverse in tps. 7, 8, 9 and 10-23-6, tp. 2-27-6, tp. 1-28-6 and tp. 1-29-6.
McKay, R. B..	Vancouver, B.C..	Latitude observations in tp. 28-5-E., tp. 16-7-E., tp. 25-9-E., tp. 74-1-Pr., tp. 36-5-Pr., tp. 60-21-Pr., tp. 32-1-2, tp. 32-1-3 and tp. 32-1-4.
McKnight, J. H..	Simcoe, Ont..	Stadia surveys in tp. 33-12-2, tps. 32-33, 37 and 38-13-2, tps. 36 to 39-14-2, tps. 36 to 41-15-2, tps. 37 to 40-16-2, tps. 38 to 41-17-2, tps. 39 and 41-18-2, tps. 34, 35 and 41-19-2, tps. 33 and 34-20-2, and tp. 34-21-2.
McMaster W. A. A. ..	Prince Albert, Sask. ..	Partial resurvey of Prince Albert settlement.
Narraway, A. M.	Ottawa, Ont..	Resurvey of tp. 12-18-3, tp. 22-19-3, tp. 9-20-3, tp. 11-25-3, tp. 13-26-3, and tps. 13 and 14-29-3. Retracement of tp. 16-22-3 and tp. 13-23-3. Miscellaneous surveys in tps. 22 and 23-18-3, tp. 21-19-3, tp. 13-22-3, tps. 12 and 16-23-3, and tps. 10 and 11-26-3. Investigation of the 3rd correction line in ranges 16, 17 and 18, west of the Fourth meridian.
Neelands, R..	Hamiota, Man..	Stadia surveys in tp. 38-21-2, tps. 38 to 40-22-2, tps. 37, 38 and 43 to 45-23-2, tps. 38 and 41 to 45-24-2, tps. 36 to 38 and 42 to 44-25-2, tps. 37, 38 and 42 to 44-26-2, tps. 36, 37, 38 and 43-27-2, tps. 37 and 38-28-2, tps. 43 to 45-1-3, tps. 43 to 45-2-3, tp. 47-3-3, tp. 46-4-3, tp. 44-6-3, tps. 43 to 45-7-3, tps. 43 to 45-8-3, and tps. 44 and 45-9-3.

SESSIONAL PAPER No. 25

SCHEDULE of Surveyors employed and work executed by them—*Continued..*

Surveyor.	Address.	Description of Work.
Norrish, W. H..	Ottawa, Ont..	Subdivision in tps. 4 and 6-2-7, tp. 6-3-7, tp. 6-4-7, and tp. 21, E.C.M. Traverse in tp. 6-2-7. Subdivision of villa lots at Woodhaven in fractional tp. W. of tp. 39, W.C.M. Triangulation along Slave lake to locate position of north limit of railway belt.
Palmer, P. E.	Ottawa, Ont..	Stadia surveys in tps. 21 and 32-24-2, tps. 21 to 24, 27 and 32 to 34-25-2, tps. 21 to 23 and 25 to 34-26-2, tps. 21 and 28 to 33-27-2, tps. 22, 23 and 28 to 33-28-2, tps. 23, 25 and 29 to 33-29-2, tps. 28 to 30-1-3, tps. 28 and 30-2-3, tp. 24-3-3 and tp. 24-4-3. Miscellaneous surveys in tp. 27-27-2, tps. 24, 25 and 27-28-2, tps. 22, 24 and 28-29-2 and tps. 21 and 27-1-3.
Pearson, H. E..	Edmonton, Alta..	Subdivision of tp. 72-20-4, tps. 72 and 73-21-4 and tp. 73-22-4. Part subdivision of tp. 70-20-4, tp. 73-23-4, tp. 73-24-4 and tp. 73-25-4.
Pierce, J. W.....	Pembroke, Ont..	Subdivision of tps. 100 and 101-9-4 and tps. 98 and 99-10-4. Part subdivision of tp. 99-9-4 and tps. 97 and 100-10-4. Correction survey in tp. 91-9-4.
Plunkett, T. H..	Meaford, Ont.	Survey of the 11th base line across ranges 10 to 15, the 12th base line from lake Winnipeg to the NE. cor. sec. 33, tp. 44-16-Pr. and the east outlines of tps. 43 and 44-11-Pr. and tps. 45, 46, 47 and 48-13-Pr.
Purser, R. C..	Ottawa, Ont..	Retracement surveys in tp. 48-22-3, tp. 45-23-3, tps. 20, 52 and 53-1-4, tp. 20-2-4, tp. 31-15-4, tp. 31-21-4 and tp. 31-22-4. Correction surveys in tps. 35 and 36-15-3, tp. 38-16-3, tps. 57 and 58-5-4, tp. 38-8-4, tp. 52,19-4, tp. 55-23-4 and tp. 53-27-4. Miscellaneous surveys in tp. 36-14-3, tp. 43-1-4, tp. 43-3-4, tp. 28-5-4, tp. 39-9-4, tp. 41-12-4, tps. 34, 36 and 53-16-4, tp. 55-22-4 and tp. 53-4-5. Traverse in tps. 61 and 62-27-4.
Rinfret, C..	St. Stanislas, P.Q.	Stadia surveys in tps. 12 and 13-4-2, tp. 13-5-2, tps. 11, 12 and 15-9-2, tps. 11 to 17-10-2, tps. 11 to 14 and 16-11-2, tps. 11 to 15-12-2, tps. 11 to 16-13-2, tps. 11 to 17-14-2, tps. 11 to 17-15-2, tps. 11 to 16-16-2, tps. 11 to 16-17-2, tps. 3 and 11 to 16-18-2, tps. 2 to 4 and 11 to 17-19-2, tps. 4 and 11 to 16-20-2, tps. 13 to 16-21-2, tps. 10 to 16-22-2, tps. 9 to 16-23-2, tps. 11 to 16-24-2 and tps. 10 to 12-25-2. Miscellaneous survey in 9-24-2.
Roberts, O. B..	Kingston, Ont.	Stadia surveys in tps. 23, 31 and 32-29-3, tps. 23 to 28 and 30 to 33-1-4, tps. 22 to 34-2-4, tps. 22 to 27 and 29 to 33-3-4, tps. 23 to 32-4-4, tps. 23 to 31-5-4, tps. 23 to 28-6-4, tps. 23 to 27-7-4, tps. 23 to 27-8-4, tps. 25 and 26-9-4, and tp. 40-22-4.
Rolfson, O.	Walkerville, Ont.	Subdivision of tps. 35, 36 and 37-15-Pr., tps. 37 and 38-16-Pr., tps. 37 and 38-17-Pr. Part subdivision of tps. 34 and 38-15-Pr. Survey of the east outlines of tps. 39 and 40-16-Pr. Stadia survey in tp. 38-18-Pr.
Scott, W. A..	Galt, Ont..	Subdivision of tps. 13 and 14-15-E., and tp. 13-16-E. Part subdivision of tp. 15-15-E. and tp. 13-17-E. Traverse in tp. 12-15-E. Stadia surveys in tps. 14 and 15-16-E. and tp. 12-17-E.
Selbert, F. V..	Edmonton, Alta..	Survey of the 27th base line between the Fourth and Fifth meridians. Survey of the east outlines of tps. 103 and 104-9-4 and part of tp. 105-9-4.
Soars, H. M. R..	Edmonton, Alta..	Stadia surveys in tps. 50, 54, 55 and 59-17-4, tps. 50 and 57 to 59-18-4, tps. 49 to 51 and 57 to 59-19-4, tps. 50, 51, 53, 54 and 58-20-4, tps. 48 to 51, 53 and 54-21-4, tps. 47 to 54-22-4, tps. 48 to 54-23-4, tp. 51-24-4, tp. 51-2-5, and tps 51 and 58-3-5.

SCHEDULE of Surveyors employed and work executed by them—*Concluded.*

Surveyor.	Address.	Description of Work.
Stewart, N. C.	Nelson, B.C.	Subdivision in tp. 26-15-5, tps. 24 and 25-16-5, tps. 26 and 27-20-5, tps. 24 and 27-21-5, and tps. 27, 28 and 29-22-5. Traverse in tps. 26 and 27-20-5, tp. 27-21-5, tps. 27, 28 and 29-22-5, and tp. 28-23-5. Triangulation and retracement surveys in tp. 24-21-5 and tp. 24-22-5.
Street, P. B.	Toronto, Ont.	Part subdivision of tp. 73-2-Pr., tps. 72 and 73-3-Pr., tps. 71 and 72-4-Pr., tps. 70 and 71-5-Pr. and tp. 70-6-Pr. Survey of the east outline of tp. 72-6-Pr.
Stuart, A. G.	Buckingham, P.Q.	Retracement of the 9th base from the Second to the Fifth meridian, the Fourth meridian from the NE. cor. tp. 51-1-4 to the NE. cor. sec. 1, tp. 62-1-4, and the Fifth meridian from the NE. cor. tp. 14-1-5 to the NE. cor. tp. 32-1-5.
Taggart, C. H.	Kamloops, B.C.	Subdivision in tps. 17 and 18-11-6, tp. 17-12-6, tps. 17 and 18-13-6, tp. 19-14-6, tps. 18 and 20-15-6, tp. 22-17-6, and tp. 19-18-6. Miscellaneous survey in tps. 19 and 20-19-6. Traverse in tp. 18-15-6, tp. 19-18-6 and tp. 17-12-6.
Tipper, G. A.	Brantford, Ont.	Subdivision of tp. 77-4-6, tp. 76-6-6, and tp. 77-7-6. Part subdivision of tp. 77-6-6 and tps. 76 and 78-7-6.
Tyrrell, J. W.	Hamilton, Ont.	Part subdivision of tps. 34 and 35-5-Pr., tps. 33, 34 and 35-6-Pr., and tps. 33, 34 and 35-7-Pr.
Waddell, W. H.	Edmonton, Alta.	Part subdivision of tp. 80-6-4, tps. 76, 77 and 78-7-4, tps. 75, 76 and 77-8-4, tps. 73, 74, 75 and 76-9-4, and tp. 73-10-4.
Walker, C. M.	Banff, Alta.	Miscellaneous surveys in tp. 4-10-E., tp. 3-12-E., tp. 18-20-Pr., tp. 3-22-Pr., tp. 16-4-3, tp. 15-5-3, tp. 16-5-3, tps. 18 and 20-6-3, tps. 15 to 18-7-3, tps. 19 and 20-15-3, tps. 10 and 12-16-3, tp. 18-18-3, tp. 18-19-3, tps. 12 and 14-22-3, tp. 11-23-3, tp. 13-28-3, tp. 1-26-4, tp. 22-5-5 and tp. 26-12-5. Levelling, contour survey and subdivision of St. Julien addition to townsite of Banff. Miscellaneous surveys at Banff.
Wallace, J. N.	Calgary, Alta.	In charge of precise and other levels, including lines of levels along the G.T.P. railway from Portage la Prairie to Goodeve, and along the C.N. railway from Saskatoon to Rosebud; a line from Grouard through Peace River Crossing to Dunvegan; a line from Desjarlais ferry on North Saskatchewan river to Cold lake, and about 200 miles of short lines and branches from the above.
Weld, W. E.	Ottawa, Ont.	Subdivision in tp. 48-13-Pr. and tp. 48-14-Pr. Survey of addition to Grand Rapids settlement at the mouth of Saskatchewan river.

Appendix No. 2.

SCHEDULE showing for each surveyor employed the number of miles surveyed of section lines, township outlines, traverses of lakes and rivers and resurvey, also the cost of the same. Surveyors whose work cannot be reckoned in miles are omitted from the statement.

Surveyor.	Miles of section.	Miles of outline.	Miles of traverse.	Miles of resurvey.	Total mileage	Total cost.	Cost per mile.
						$	$ cts.
Akins, J. R.	.....	241	.....	.....	241	24,775	102 80
Aylsworth, C. F.	.....	.....	51	221	272	8,418	30 95
Baker, J. C.	236	102	133	.....	471	15,701	33 33
Bennett, G. A.	.....	.....	340	131	471	5,514	11 71
*e*Blanchet, G. H.	.....	128	.....	1	129	11,647	90 29
Boulton, W. J.	.....	.....	564	12	576	5,067	8 79
Bowman, E. P.	.....	.....	440	34	474	5,695	12 02
Brenot, L.	265	52	42	.....	359	15,668	43 64
Buchanan, J. A.	300	54	58	.....	412	14,210	34 49
Calder, J. A.	138	.....	11	2	151	9,177	60 77
*e*Christie, W.	363	53	31	7	454	10,407	22 92
*a*Christie, W.	.....	.....	.....	35	35	1,669	47 68
*d*Coltham, G. W.	.....	.....	155	12	167	2,020	12 09
Cote, J. M.	.....	.....	.....	405	405	9,774	24 13
Cowper, G. C.	.....	.....	294	84	378	5,313	14 06
Cumming, A. L.	188	37	47	8	280	10,312	36 83
Davies, T. A.	276	42	27	.....	345	13,285	38 50
Day, H. S.	240	66	38	.....	344	14,501	42 15
Evans, S. L.	.....	.....	3	519	522	8,870	16 99
Fawcett, S. D.	279	42	88	.....	409	14,488	35 42
*e*Fletcher, J. A.	.....	204	.....	9	213	28,007	131 49
Fletcher, W. A.	.....	.....	484	62	546	4,946	9 05
*e*Galletly, J. S.	177	53	116	.....	346	11,674	33 74
Gibbon, Jas.	71	.....	34	37	142	9,049	63 73
Glover, A. E.	264	74	66	.....	404	14,426	35 70
c e Herriot, G. H.	.....	126	.....	62	188	14,404	76 61
Heathcott, R. V.	391	36	28	.....	455	14,303	31 43
Johnston, W. J.	107	.....	14	19	140	8,874	63 39
*e*Johnston, J. H.	340	81	39	.....	460	14,489	31 49
Knight, R. H.	209	126	46	.....	381	14,269	37 43
*b*LeBlanc, P. M. H.	501	198	167	4	870	35,422	40 71
*e*Lighthall, A.	360	90	61	.....	511	13,891	27 18
Martindale, E. S.	.....	.....	294	8	302	3,618	11 98
McEwen, D. F.	376	62	124	.....	562	13,395	23 83
McGarry, P. J.	89	.....	44	13	146	10,005	68 53
McKnight, J. H.	.....	.....	577	8	585	5,479	9 37
Narraway, A. M.	.....	.....	.....	630	630	10,076	15 99
Neelands, R.	.....	.....	526	129	655	5,116	7 80
Palmer, P. E.	.....	.....	238	75	313	5,193	16 59
Pearson, H. E.	409	44	49	.....	502	13,278	26 45
Pierce, J. W.	340	126	160	2	628	16,631	26 48
*e*Plunkett, T. H.	.....	106	.....	.....	106	16,529	155 94
Rinfret, C.	.....	.....	182	113	295	4,642	15 73
Roberts, O. B.	.....	.....	390	92	482	5,642	11 70
Rolfson, O.	298	72	188	.....	558	13,074	23 43
*e*Scott, W. A.	214	46	210	.....	470	13,888	29 55
*e*Seibert, P. V.	.....	157	.....	.....	157	21,202	135 04
Soars, H. M. R.	.....	.....	523	2	525	5,387	10 26
Stewart, N. C.	64	.....	81	8	153	8,947	58 47
Street, P. B.	134	50	74	.....	258	8,345	32 35
*e*Stuart, A. G.	.....	.....	.....	677	677	9,256	13 67
Taggart, C. H.	101	.....	2	20	123	9,106	74 03
Tipper, G. A.	306	30	39	.....	375	14,457	38 55
Tyrrell, J. W.	254	83	86	.....	423	10,584	25 02
*e*Waddell, W. H.	234	144	70	.....	448	14,700	32 81
Total	7,524	2,725	7,234	3,441	20,924	628,815	30 05

a Base line resurvey.
b Includes work of two seasons.
c Estimate only; final returns not yet in.
d Taken ill; work taken over by E. S. Martindale.
e Total cost includes cost of levels.

PART V

DOMINION PARKS

DOMINION PARKS.

Following is the fifth annual report of the Commissioner of Dominion Parks. To it are appended reports from the chief superintendent and from the superintendents of the various parks. These naturally deal with the details of the work accomplished in the several parks during the year. My own report, therefore, is principally a general survey of the work, and of the aims and ideals upon which it is based.

DOMINION PARKS BRANCH.

In previous reports I have submitted figures to show that Canada's National Parks already bring into the country very large sums of money through the tourist traffic which they attract, and that this business is capable of tremendous expansion provided a vigorous policy of publicity is carried out and adequate steps are taken to furnish facilities which will enable the tourist to see the charms and wonders of the parks in safety, comfort, and convenience.

TOURIST TRAFFIC.

Perhaps circumstances were never so favourable as at present for effective work with respect to development of the tourist traffic. On account of the war, Europe, which in the past has annually taken a toll of hundreds of millions of dollars in tourist business, is now closed to the pleasure seeker. On the other hand, because of the war the United States is enjoying a period of unprecedented prosperity and its people are financially in a position to spend huge sums upon travel and recreation. At the present time, for all practical purposes, the only field open to them is Canada and the United States.

As soon as the war is over undoubtedly thousands of tourists from this continent will wish to go to Europe to see the battlefields. But the past has clearly established the fact that practically every tourist who visits the Canadian Rockies becomes a "booster" for them. It is therefore imperative that during the war every possible effort should be made to attract tourists to the Canadian mountains in order that when the call of the battlefields sets in there may be thousands of people throughout this continent to whom the call of the mountains shall be strong and who moreover will influence others to "See America First."

While the desirability of attracting tourist traffic on account of its commercial aspect is always evident and always important, the conditions that the war is creating in Canada now make it doubly so. Canada is daily adding huge sums to its national debt on account of war expenditure; and, in addition, thousands of its former producers are now at the battle front. There is nothing in history to suggest that the end of the war will not mean a period of re-construction calling for commercial capacity, together with resourcefulness and elasticity of the nation. If during the war and the years succeeding, millions of dollars can be brought into the country through tourist traffic, a valuable contribution to national welfare will have been made.

It is estimated that 50,000 foreign tourists visited the Canadian mountains last year. If the average expenditure of these tourists was only $100 each (and this is con-

sidered a very low estimate) it means that five million dollars was added to the circulation of the country—that this amount of money was distributed among the railway men, the livery men, the hotel employees, the merchants, and the farmers of the country. When it is considered that the people of this continent spend hundreds of millions of dollars each year on travel and recreation and that the Canadian Rockies offer a field for travel and recreation unsurpassed in the world, it seems obvious that Canada should and can get a much greater share of the tourist business than she is now getting. With the favourable opportunity which existing circumstances present, and the pressing need of neglecting no potential source of revenue, the present is the pyschological moment for redoubled activity in this connection.

CANADA'S SUCCESS.

Canada's success in past years in regard to tourist traffic is an indication of what efficient work can do with respect to succeeding years. In the spring of 1916 "The Committee on the Public Lands" of the House of Representatives at Washington held two special sittings listening to evidence with respect to a Bill then before Congress providing for the establishment of a National Parks Bureau for the United States. I wish to submit some extracts from the committee's report, which constitute striking evidence as to the views held in the United States concerning the tourist traffic in Canada.

The following is from the evidence given by Mr. Richard Watrous, Secretary of the American Civic Asssociation:—

> "Canada has been ahead of us on the national park proposition in every respect—in almost every respect. I am going to say, first of all, that that was best illustrated this past summer when the great drift of travel from the East to the West on account of the expositions at San Francisco and San Diego brought out the fact that the Canadian national parks, because of their exploitation, and because of the things that had been done to make them ready for the comfort and convenience and safety of the tourists, drew the great, wholesale travel—I learned on very good authority that of the travel which went west about 75 per cent was routed, either going or returning, by Canadian railroad systems, so they had the business going one way, and the other way was divided up between our four or five transcontinental systems. That meant thousands upon thousands of dollars of cold American cash for Canada, to be credited to its parks."

The following is an extract from the evidence of Mr. Stephen T. Mather, Assistant to the Secretary of the Interior (Washington):—

> "I think one reason why Glacier did not get more visitors was because a great majority of the people who went to the expositions returned by the northern routes—75 per cent of them returned by the Canadian Pacific, thanks to the very efficient advertising which Canada has done".

Mr. Horace McFarland, President of the American Civic Association, in his evidence referred to certain literature being issued in connection with American National Parks and said:—

> "It does seem to me that if the war should end to-morrow, and the Atlantic lanes should be open and free from any assault, the circulation of these documents in the fashion that is contemplated would probably result in keeping in the United States during 1916 at least $50,000,000 that would otherwise go abroad. Advertising pays, as has been rather vigorously brought out in con-

nection with the diversion from the States of the people who went up along the Canadian Pacific on their way back from the expositions, and advertising of this nature is so businesslike that I wonder that the Government ever gets away with it".

Mr. Robert Sterling Yard, of the Department of the Interior, Washington, referring to publicity work in regard to the Canadian mountains said:—

"Till then in this country, every man, woman, and child, had been brought up to the belief that the greatest scenery of the world was in Switzerland; and now, in the last few years, they have also added the Canadian Rockies. That is the great word in this country to-day—the Canadian Rockies."

Mr. P. S. Eustis, General Passenger Agent of the Burlington Railroad, dealing in his testimony with the arrangements among the various railways in regard to tourist tickets said:—

"Those coast tickets are on sale just the same as they always have been, the same as they were last year, but a great many of them take in the Canadian park region, for one reason or another. They seem to have better park arrangements in Canada than we have in the United States. We are rather scattered."

HUMAN DIVIDENDS.

The commercial dividends which national parks pay are of such great importance that they cannot at any time be overlooked, but the human dividends they pay in the form of renewed and increased health, efficiency and power—physical, mental, and moral—on the part of the people of Canada, are of much greater moment. Of all Canada's natural resources, the greatest is her men and women. In previous reports I have pointed out the wastage and the havoc wrought among our human assets in normal times of peace, and have urged the extension of national parks work as a means of remedying these conditions. Whatever conditions may have been in the past, the need of a policy calculated to conserve Canada's human assets is now, in consequence of the war, a million times greater. To-day several hundred thousands of the best men of the Dominion are taking part in the war. Thousands of them will unfortunately never return, and many more will come back shattered by bullet, incapacitated by shell. Even those whom circumstances have kept in Canada cannot be expected to emerge from the strain and worry unimpaired. At the end of the war there will necessarily be a period of reconstruction calling for the best efforts of virile and efficient manhood and womanhood. Canada's success within her own borders and her contribution with respect to the Imperial and inter-Ally schemes that are already being discussed will depend on the efficiency of her human assets. The higher the average in regard to the human units, the greater will be her measure of success. With the losses and damage she is sustaining, with the work that lies before her at the conclusion of the war, it follows with absolute logic that nothing should be neglected which will restore and promote the health, the virility and the intelligence of the Dominion's human assets. From this time on, it must be more and more recognized that patriotism not only consists in warfare against a country's enemies without its borders but involves the care of its citizens within.

FUNDAMENTAL FUNCTION.

The ideal with respect to Canada now must be the development of every Canadian to his utmost degree of efficiency. Such efficiency depends entirely on his physical, mental and moral development to minister to which is the fundamental function of

national parks. Previous reports have dealt at length with this subject to show that to put and to keep the human unit in its most efficient state, recreation in the out-of-doors, especially in those portions of the out-of-doors of outstanding beauty and attractiveness is absolutely essential. The reasons which prove this need not be repeated except to emphasise what is familiar to every one, viz., that an order to go to the seaside or the mountains is the prescription most given by physicians in cases which defy all other methods of treatment.

National parks comprise the most beautiful parts of the Dominion. They are maintained for all the people of Canada—for the ill, that they may be restored, for the well, that they may be fortified and inspired by the sunshine, the fresh air, the beauty, and all the other healing, ennobling, and inspiring agencies of nature. They exist in order that every citizen of Canada may satisfy his soul-craving for nature and nature's beauty; that he may absorb the energy and power of the sunshine and the fresh air; that nature's smiles may be reflected into him and that he may sing with the winds and laugh with the mountain torrents; that he may absorb the poise and restfulness of the forests; that he may steep his soul in the brilliance of the wild flowers and the sublimity of the mountain peaks; that he may develop in himself the buoyancy, the joy, and the activity he sees in the wild animals; that he may stock his brain and his mind as he would a warehouse with the raw material of intelligent optimism, great thoughts, noble ideals; that he may be made better, happier and healthier.

It is true that, situated as they are now, national parks—national health reserves—are not within reach of all the citizens of Canada. However, that is a condition that can gradually be improved, and it is felt, moreover, that national parks as they are may be likened to a great power house in remote mountains which carry light, heat and energy to far-away cities. They proclaim to all the people, in the voice of the country, the necessity for recreation in the out-of-doors, and encourage those who cannot go to the parks to go to other beauty spots—with which Canada abounds—and there re-create themselves by getting in close touch with nature.

THE WAR AND THE PARKS.

The war has naturally exercised a great influence upon parks matters. In the first place it has necessitated a reduction of 50 per cent in the appropriations for parks purposes. In the second it has impressed more forcibly than ever upon those concerned in parks work the importance of the results to be achieved through the development of national parks.

ALIEN LABOUR.

The appropriations for 1915-16 were calculated purely on a maintenance basis. A great deal of new work has been accomplished, nevertheless, through the establishment in the parks of working camps of interned aliens. In this connection I wish to acknowledge the cordial and efficient co-operation of General Sir William D. Otter, in charge of internment operations. At the beginning of the year large numbers of interned aliens were being maintained by the Government. It was felt that it was not good for the prisoners to live for months in a state of idleness; that it would be advantageous for them to have work to do and that having to maintain them in any case it would be good business for the Government to secure with such labour the construction of roads and other public works in the parks. By an arrangement with the internment authorities the parks service undertook to provide suitable camps, foremen to direct the work and transport of supplies for the camps; the guarding, feeding, payment, and control of the aliens to be the duty of the internment service.

The total number of aliens at work in the parks at the end of the fiscal year was 800.

The aliens were employed in the summer months principally on road construction; in the winter on bridge construction, cutting rights of way for roads, cutting of fence posts for Buffalo and other animal parks, the making of macadam, and general clearing operations in the woods.

FOREST PROTECTION.

Special progress was made during the year with respect to the protection of the forested areas of the parks from fire, a matter which is of vital importance in parks work. The great forested slopes of the Canadian Rockies contribute very largely to the charm of the mountains. Substitute blackened stumps and gaunt and lifeless rampikes for such areas, and how many tourists would care to visit the parks, how many people would seek or could secure there the recreation and health and vigour which the parks as they are develop in those who visit them.

The two most important developments with respect to forest fire protection concerned:—

The development of a readily portable gasolene pumping engine for putting out fires when they occur; this being so far as can be ascertained the first practical and successful step ever taken to utilize power pumps for forest protection.

A campaign of education calculated to prevent the starting of forest fires.

In regard to the engine it needs no argument to convince any one that the surest way of putting out fire is to apply water. In forest fire fighting it is well known, especially in a mountainous country, very little can be accomplished with buckets. It is a physical impossibility for men to carry water under fire conditions for any length of time, and it is equally true that when a man has climbed up a rough hill-side with a bucket of water there is usually very little water left in the pail when he reaches the fire.

It is the experience of nearly all who have been concerned in forest protection that most of the big fires are what are called secondary fires. As a rule fires are discovered early enough to permit of their being isolated in a small area. The usual practice then is to have a body of men watch the fire to prevent it spreading from the burning logs, stumps, and humus of the segregated area. Very often a wind storm comes up, carries the fire forward despite the efforts of the watchmen, and a conflagration is the result. It was figured that if water could be got quickly and in quantity on such a confined area, one of the most serious menaces would be removed. It was this that led the parks organization to consider the posssibility of a portable gasolene fire engine. For such a purpose it is obvious that light weight and high power are essential. After a number of experiments, an engine has been developed which combines both. It weighs, stripped, 118 pounds; equipped with solid oak base, etc., for work, 143 pounds. This engine is rated 6 horse-power. It delivers 20 gallons of water per minute, through 1,500 feet of hose. Assuming that it would take one man with a bucket ten minutes to deliver 10 quarts of water at a fire, it will be seen that this engine will do the work of 80 men, and of course do it at an insignificant cost.

The engine in its field tests has exceeded expectations. While there were no large forest fires during the year, the engine was tried out in the field in brush-burning operations. Mr. H. E. Sibbald, Chief Fire and Game warden, Rocky Mountains Park, who was in charge of the engine part of the time reported as follows:—

> The engine enabled us to burn the brush in large piles within a clearing of 40 feet in very dry weather without scorching the standing trees; also enabled us to keep fire from spreading along the ground and entirely extinguishing fires before leaving in the evening. Not one fire started up after being put out.

We carried the water in one instance over a steep hill, 200 feet high, and along clearing for 600 feet, the gauge showing a pressure of from 85 to 90 pounds. This enabled us, by holding the nozzle close to the edge of the fire, to make a ditch from 4 to 6 inches deep all around the fire from the force of the water. This will relieve us of digging a trench round a fire, as it is through the hidden roots that fires always get away."

Mr. C. Phillips, Fire Warden, who continued in charge of the engine wrote:—

The whole apparatus was given a very fair four day-test at the Alien Detention Camp at Castle mountain last month, while the aliens were burning large piles of brush and small timber, and the pump undoubtedly kept the fire within the required area.

Water was taken from the river and pumped through 800 feet of hose to points where required, varying from 50 to 150 feet above the water level. A pressure of 90 pounds was obtained at the outlet of the pump, and a stream of water was thrown about 40 feet at the nozzle.

An engine of this kind, that can be taken anywhere in the mountains, by man-power if necessary, should be of great value in extinguishing fires which are guarded, and possibly, may be of great use in direct fire fighting. The intention is to use a battery of engines, so arranged that one engine will pump through 1,500 feet of hose to a readily portable canvas basin, and a second unit pump from that, and so on.

EDUCATIONAL WORK.

A great deal of attention was devoted to a campaign calculated to educate the public in the matter of forest protection, and to secure the co-operation of the public in the matter of fire protection.

Practically there are only two kinds of fires, so far as the parks are concerned at any rate; those arising from human causes and those caused by lightning. We cannot prevent fires that are caused by lightning but those of human origin are nearly always the result of ignorance or carelessness. Not one fire in ten thousand is started deliberately. It is simply another case of "not knowing it was loaded"—because the necessity for care is not realized. It is obvious that education is a first necessity. It is agreed that the way to influence the public is to use affirmation and iteration. Moreover, it is well recognized that man is a creature of habit. A campaign of education was therefore launched calculated to force into the minds of the public by affirmation and iteration the necessity of every one helping in forest protection, and to develop as a natural result on the part of the public careful habits with respect to fire.

The policy followed was to secure the printing of suitable fire-warning notices on articles which are used in the woods in order that the warning should constantly be before the people at times when they are liable to start forest fires. As a result of the campaign, fire-warning notices are now published on practically all the match boxes manufactured; notices are inserted in all the rifle and shot-gun ammunition boxes, and are placed on many of the axes made in the Dominion; in the cabs of locomotives operating in the parks; in Bell telephone directories; in railway time-tables; in railway passenger coaches; on dining-car menu cards; on the menu cards and in the guest rooms of the hotels in the parks; in the form of coloured slides in the moving picture shows operating in the parks; on the livery rigs and pony reins in the parks; on the letter paper of hotels and business places in the parks. It is an evidence of the public spirit of the business men of Canada that the various firms who were asked to co-operate in this compaign of education responded promptly and willingly, and in all cases did so at their own expense.

PROTECTION OF WILD LIFE.

Wild life, the protection of which is one of the important features of parks work, occupied a great deal of attention. The activities of the Parks Branch in this connection extended beyond the protection of the wild life in the parks, and included many matters in relation to conservation of game and the fur-bearers of the Northwest Territories; the question of the development of reindeer herds in the Canadian hinterland; the problem offered by wolves and other predatory animals along the international boundary; and, in co-operation with Dr. Gordon Hewitt, Dominion Entomologist, and Mr. James White, Assistant to the Chairman of the Conservation Commission, action in regard to the proposed treaty with the United States for the protection of migratory birds.

CAPTURE OF ANTELOPE.

Special gratification is felt at the capture of a herd of nearly 50 wild antelope, and their location within a fenced park. The antelope, once almost as numerous as the buffalo, in certain portions of the west, is now very rapidly approaching the extinction stage. The herd which has been captured, it is hoped, will assure the perpetuation of this beautiful animal. The capture of the herd was carried out by Mr. Maxwell Graham, Chief of the Animal Division of the Parks organization, and the method followed was a novel one. Discovering the antelope on what appeared to be their summer habitat, Mr. Graham succeeded in building a fence around the area without disturbing them, thus avoiding the shock of capture which in other years has almost always been followed by fatal results.

CATTALO EXPERIMENTS.

For several years this Branch has urged that steps should be taken to carry on cross-breeding experiments with respect to buffalo and domestic cattle with a view to the development of a new type of domestic animal which would not only possess the capacity to rustle and to take care of itself under conditions which are fatal to ordinary range cattle, but which at the same time would possess the additional value of producing a robe like that of the buffalo.

During the year Mr. J. H. Grisdale, Director of Dominion Experimental Farms, undertook to take charge of the cross-breeding work and has made all arrangements for carrying on the experimental work.

PARKS IDEAL.

As I have endeavoured to point out in the previous report, the ideal on which National Parks are being administered is the production of dividends for Canada—dividends in gold and dividends in human units. It is confidently believed that parks, or rather that for which parks stand—recreation in God's out-of-doors—can materially assist in remedying whatever damage the war may do to Canada's human assets. The war, on the other hand, has enabled the Canadian people to find themselves as never before. Canadians to-day possess and know they possess purposefulness, capacity for responsibility and organization, directive ability, discipline. They emerge from the war with a sense of capacity and masterfulness. At its root, patriotism is to a great extent the love of nature as a man knows her in his own country. It is that caress of nature, which is the quality of their country in their own eyes, which has inspired the achievements of Canadians in Flanders. It is the caress of nature which will make Canada's crop of citizens as rugged and sturdy as its mountains, as powerful as its waterfalls, and as brilliant as its sunshine. National Parks exist to-day primarily to guide the Canadian people to close contact with nature.

J. B. HARKIN.

APPENDIX No. 1.

REPORT OF THE CHIEF SUPERINTENDENT OF DOMINION PARKS.

Annual reports from the superintendents of Rocky Mountains Park, Banff, Alta.; Yoho and Glacier Parks, Field, B.C.; Revelstoke Park, Revelstoke, B.C.; Buffalo Park, Wainwright, Alta.; Elk Island Park, Lamont, Alta.; Jasper Park, Jasper, Alta.; Waterton Lakes Park, Waterton Lakes, Alta.; are appended hereto. They are arranged for convenience of reference as in the past, viz:—

1. Report of Chief Superintendent of Dominion Parks.
2. Report of Superintendent of Rocky Mountains Park.
2*a*. Report of the Curator of Banff Museum.
2*b*. Report of the Alpine Club.
2*c*. Analysis of the Nationalities of visitors to the Hotels.
2*d*. Report of the Timber and Grazing Inspector.
3. Report of the Superintendent of Yoho and Glacier Parks.
4. Report of the Superintendent of Buffalo Park.
5. Report of the Superintendent of Elk Island Park.
6. Report of the Superintendent of Waterton Lakes Park.
7. Report of the Superintendent of Jasper Park.
8. Report of the Superintendent of Revelstoke Park.

Owing to several changes taking place in the administration of Buffalo and Jasper Parks, the reports of these parks were necessarily not as full as they might have been if material at first hand had been available. These reports were prepared by myself at the request of the Commissioner of Dominion Parks.

ROCKY MOUNTAINS PARK.

The work done and improvements made in the National park at Banff are at once observable to the tourist. The main travel roads have been well graded up and finished off with a top dressing of fine limestone rock, well rolled and bonded, giving a finished gray appearance, and contrasting strongly with the deep green of the timber, and adjacent mass of vari-coloured shrubs and grasses which grow luxuriously along the borders of the roadways.

The principal work done was the regrading, widening, and surfacing of the road from the Bow River bridge to the Cave and Basin; this is known as Cave avenue, and is conceded to be one of the best constructed roads in the park. Other roads have been graded, the heavy underbrush cut and thinned out, for a distance on each side of the road. Considerable improvements have been made to the recreation grounds in the matter of clearing willows and underbrush, thus adding an additional area for further extension and development of this most picturesque of national playgrounds.

The advent of automobiles into the transportation problem of the National park, so strongly opposed by some of the owners of horse-drawn vehicles, has resulted in the opening up of many of the roads and drives hitherto closed to motor traffic.

The motor r ad from the Prairie cities, within the boundaries of the National park has been carefully attended to and the connecting links remaining uncompleted last year have been coupled up, giving the motorist a splendid scenic drive from

Banff, along the valley of the Bow river, skirting the charming Vermilion lakes, with the pinnacle of Mount Edith in the near distance towering some 9,200 feet above sea-level. Mountain sheep are to be seen on the slopes of "Sawback"; to the south, mounts Bourgeau and Brett; in the distance Pilot mountain can be discerned. The car speeds forward through avenues of spruce, balsam, and aspen, crossing numerous streams and mountain torrents, finally the great Castle rock, truly a magnificent pile, bursts into view. Castle station on the line of the Canadian Pacific railway is to the left of the roadway. A mile west the road branches off to the left, and takes a southerly direction, crosses the Bow river by a two-span steel bridge, climbs the north slope of the Boom mountains, following Altrude creek, gradually rising in a series of switchbacks to an elevation of 5,600 feet, and connects at the interprovincial boundary with the uncompleted road via the Sinclair pass into British Columbia. The motorist can proceed on the other branch of the auto road only a few miles beyond Castle, but it is anticipated that during the coming year this road will be completed into Lake Louise, one of the most charming of mountain resorts.

The road from Lake Louise to Moraine lake has received its annual clearing of detritus brought down from the upper slopes by the action of the elements. Torrential rains did considerable damage to this favourite drive; repair gangs were put to work and the roadway put into condition to carry the season's heavy traffic. This favourite driveway requires to be regraded and practically rebuilt on an easier gradient, but with the small appropriation available nothing but ordinary repairs could be made.

The superintendent's report deals exhaustively with the various improvements and requirements of the future, therefore I will not dilate further on the work done in the Rocky Mountains park. In passing I desire to note that tourists visiting Banff for the first time are usually enraptured with the beautiful surroundings, and as they delve deeper into the beauties of the various scenic points, public buildings, superb sulphur baths, the Zoo, the buffalo and deer paddocks, the fish hatchery and boating facilities, they cannot fail to carry away with them a desire to return and bring their friends to further explore the views of hidden grandeur known only to those whose time and means permit an extensive camping tour into the surrounding ranges of mountains.

Owing to the financial conditions and continuance of the war, building operations as respects private residences were a negligible quantity.

The fire-fighting equipment received careful attention. The building allotted to the fire department was improved in many ways. Accommodation was provided for members of the voluntary brigade; the organization and discipline of which are of the finest order. One fire of importance occurred during the year, resulting in the practical destruction of the Alpine Block, owned by Hon. Dr. R. G. Brett, Lieutenant-Governor of Alberta.

VISITORS.

There was a large increase in the number of visitors registered at the various hotels, caused by the extra travel to and from the San Francisco exposition.

YOHO PARK.

Owing to the continuance of the present financial depression and great calls made upon the resources of the Dominion, both in men and money, to carry on the war to a successful termination, all projected new work was postponed, and only that absolutely necessary for the proper maintenance of the various scenic roads and trails was undertaken.

A greater rainfall was noted than in previous years, consequently the roads and trails required constant supervision to keep them in order for the excessive tourist travel which developed during the season. What with the wide advertising given to the scenic beauties of the Dominion parks by distribution of literature and personal talks with the many noted travellers going to and returning from the San Francisco exposition, the "Yoho Park" was the "Mecca" of a great number of tourists who would otherwise have passed onward oblivious of the scenic grandeurs within easy access of the Mount Stephen House at Field.

The winter storms and spring snowslides necessitate an annual clean up of the detritus brought down from the upper slopes. A small gang was employed to open the road to Takakkaw falls via Yoho canyon. When this was finished the work of widening the second canyon, left unfinished from the previous year, was undertaken, the material being solid rock; the roadway between the first and second canyon, about half a mile in length, was widened and gravelled. The upper slope of the "Switch-back" showed signs of falling and blocking the roadway; to prevent this the entire length was "log cribbed" and the road made secure for traffic.

Repairs were necessary on the new grade between the four and five-mile posts, owing to the erosion of the upper slope from climatic conditions.

There is considerable fallen timber along the driveway between miles four and a half and six, which must be an eyesore to the travelling public; it should be cleared up and judiciously burnt. Some work of this nature was done two years ago and resulted in a great improvement in the appearance of the driveway.

The Emerald Lake road was kept in excellent repair by the two sectionmen allotted to that district. A portion of this roadway, about the one-mile post, needs to be entirely regraded, and raised at least 2 feet above its present level as in high water it is practically flooded for a considerable distance. In place of constantly repairing the cribwork, it would be more economical to swing the road to the right, rebuild it along the side hill, and thus avoid going along the river flats, which may be washed away at any time by the changing of the channel.

Two new trails were constructed, one giving access from Field, via Ottertail road to lake O'Hara, the other from a point on the Emerald Lake road, near the Natural bridge, up the Amiskwi valley to the north boundary of Yoho park. The new trail to lake O'Hara opens up additional scenic features to the tourist; that up the Amiskwi is more in the nature of a fire protection trail.

A new road has been projected from the Ottertail across Boulder creek to canyon of the Kickinghorse, thence connecting with the Emerald Lake road, affording a pleasant round trip from Field, and revealing another incomparable glimpse of alpine grandeur.

The annual cleaning up of Field townsite was undertaken, and many improvements of a minor nature completed.

GLACIER PARK.

The grandeur of this park, so well known and so often dilated upon, does not need further emphasis at my hands, therefore I will pass onward to the mysterious subterranean passages, known as the Nakimu Caves, which are now within easy reach from the Glacier House by a stage line, to a point on the road not yet completed, for vehicular traffic. Alighting from the stage the lover of the sublime should not be deterred from continuing on foot up the somewhat declivitous and tortuous paths to the caretaker's chalet. Mr. Deutschman, the caretaker, is most solicitous in showing and explaining the mysterious caves, and pointing out the various scenic features to be observed from his model cabin.

From careful exploration surveys of these caves it has been found that by driving a tunnel for about fifteen feet, through the solid rock, the caves can be made more accessible to the public. It is hoped this work will be undertaken in the coming year and thus throw open to the tourist additional attractions to Glacier park.

A very neat log cabin was erected a short distance from the Glacier House, on the Nakium Caves road, for the accommodation of the fire warden during the summer season. Many tourists have commented on the picturesqueness of this cabin, and it is without doubt one of the neatest in any of the Dominion parks.

The usual clearing out of the various trails leading to the Illecillewaet glacier was undertaken and completed as soon as weather conditions would permit. An old trail was opened up from Bear creek to the Beaver river, thence up the Beaver river for a distance of some fifteen miles, mainly for fire-protection purposes.

REVELSTOKE PARK.

As the appropriation granted for the season's work was approximately the same amount as last year, it was carefully expended on the continuation of the auto road from the point where it remained unfinished, approximately about station 200. From this station to 304 it was partly constructed the previous year, therefore our energies were devoted to completing this section and carrying it on as far as funds and season would permit. About the first of June repair work was undertaken to remove obstructions, such as mud and rock slides, cleaning out of side ditches and filling in washouts, caused by the usual spring run-off. A crew of sectionmen took this work in hand, and made a first-class job. The road material is of an excellent quality, and on the wettest days of the season automobiles can go up and down with the greatest ease. There are one or two short spots which will need gravelling, but as a whole the road is in excellent condition in spite of the heavy traffic during the past season. On the last day of August the road was completed to station 430, and the right of way cut and cleared as far as station 542.

A heavy fall of snow in the last week of October brought the season's work to an end.

The pony trail from the city of Revelstoke to the summit of mount Revelstoke was put in order wherever necessary to accommodate the many pedestrians who spend their spare time climbing the mountain to enjoy the ever-changing panorama.

Since the game warden has been patrolling the park and preventing hunting, the partridge and blue grouse have become plentiful. It is a common occurrence to meet coveys of them on the newly constructed auto road. They are very tame and much admired by the tourists taking the auto drive up the mountain as far as the road is open for traffic. When it is completed to the summit it will be a scenic drive second to none in any of the Dominion parks.

BUFFALO PARK.

I have already written a report on Buffalo park, which will be found included in these pages, and therefore will pass on to Elk Island park.

ELK ISLAND PARK.

The usual spring clean-up was undertaken, and the long growth of grass and weeds of the previous year along the outside of the fence line disposed of by burning, as a means of protecting the park from any stray fire that might cross the road allowance. The inner guard, some 30 feet wide, would prevent the fire from getting into the timber within the fenced area, unless the same was fanned by a heavy wind.

The main fence required constant watching, the posts had served their utility and required replacing. A number of posts were cut by alien labour in Jasper park and shipped to Lamont.

Hay lands being limited within the area of the park, additional lands were set apart outside the fenced inclosure; they are adjacent to the south fence and in the Cooking Lake forest reserve. On these lands the quality of hay was excellent, but the ground being rough made it difficult to gather.

All the animals are in fine condition, and it has been observed that the buffalo in this park thrive exceedingly well, their coats being dark and the fur of a fine quality, owing, no doubt, to the succulent herbage growing in the numerous sloughs, which are surrounded by dense poplar and willow bluffs. This is an ideal home for moose, elk and deer. They thrive wonderfully, and it should be borne in mind that it is absolutely necessary if we are to continue raising each year additional stock of the animals above enumerated, the Cooking Lake forest reserve should be added to that of Elk Island park as one park for the preservation of the elk, deer, and moose, and in addition form a reserve for the rapidly increasing herd of buffalo. I have previously made this recommendation. I regret to add that the band of elk which was frequently seen outside the fenced inclosure is gradually being reduced in number.

The road commenced and left incomplete to Sandy Beach owing to the enforced economy, should be completed in the coming season, as it gives access to the east end of the lake and is an ideal residential area and picnic ground, affording excellent bathing facilities. At present it can only be reached by boat or motor launch from the west end or picnic grounds, adjacent to the area reserved for the superintendent's residence.

WATERTON LAKES PARK.

The development work in this, as in the other parks, has been considerably retarded on account of the war, consequently only that absolutely necessary for the convenience of the travelling public in the matter of repairs to roads and bridges was undertaken.

The season was very wet, making the roads outside the park area from the north and east almost impassable.

A contract was let for the erection of a pile trestle bridge across the Waterton river to enable visitors from Macleod, Lethbridge, Cardston, and the surrounding districts to cross the river instead of taking chances of crossing by way of the ford, which is for the best portion of the year impassable for motor cars. This bridge was commenced in October, 1915. Owing to the bad roads and inclemency of the weather it was not opened to traffic until the last week in January of this year. The structure is very substantially built and is 351 feet in length with a clear roadway some 14 feet in width. A new roadway skirting the west shore of the lower lake and joining the Pincher creek road at the Blakiston Brook bridge has been graded from the west approach for about half a mile; on the east some 400 feet, to connect with the old trail; the balance has been surveyed, and when the whole is completed it will be one of the prettiest driveways in the park. Other roads have been projected and surveyed. When they are all constructed the scenic beauties, together with the excellent fishing in Waterton Lakes park, will be accessible to the tourists and the followers of Isaac Walton.

The boulevards were cleared of undergrowth and access given to the waterfront. The streets received attention, and it is hoped that now the bridge is completed people will take up lots, erect summer cottages, and spend their vacation seeing and enjoying the beauties of the scenery now within easy reach.

Wild animals of all species have shown themselves in greater numbers than formerly. Deer are to be seen in and around the townsite; sheep also can be seen on Sofa mountain, across the narrows of the upper lake. Bear are plentiful, so much so, that grizzlies made depredations on the settlers' stock adjacent to the east boundary of the park.

You will note from the reports of the various superintendents that they have given, where possible, the number of visitors to each of the parks. It is gratifying to know that our national parks, with their splendid roads, are yearly attracting an increasing number of people.

P. C. BARNARD-HERVEY.

APPENDIX No. 2.

REPORT OF THE SUPERINTENDENT OF ROCKY MOUNTAINS PARK.

The beginning of the year found the Dominion still engaged in the worldwide war, and in consequence of the obligations assumed in connection with the conflict, appropriations for public services had to be handled in a very conservative manner. The Dominion parks figured in the caution which, generally, governed the passing of estimates. Under the circumstances, however, I think the moneys placed at the disposal of the parks officers here were generous in their amounts and enabled us to do a good deal of valuable and necessary work, besides providing employment for residents of the park during times which otherwise would have been very lean.

The total amount of the year's appropriations for this park was $144,780, which, being very considerably less than the total of immediately preceding years, and considering that our annual charges for ordinary and unavoidable maintenance are high, did not allow of our undertaking much new work.

The extension and improvement of roads and trails within the park continues to be our chief consideration. The principal items of that work were the regrading, widening, and resurfacing of Cave avenue and the construction of three new pony trails, which latter have opened up some very interesting and desirable country.

With the modification of the regulations governing the running of automobiles in the park, the number of these vehicles coming into the Banff district, brought into instant prominence the unsuitability of Cave avenue as it then existed for this class of traffic, more insistently because the new bath-house is the natural Mecca for all automobile parties coming into town. It was, at that time, a road of the switchback variety, narrow, and of uneven surface, and was quite unsuitable to allow these fast-moving machines to share the roadway with heavy tally-hoes and other vehicles. The work on the road was finished in September, including a considerable yardage of rip-rap side drains, and a raised footpath on the residential side of the road. The highway is one of the very best in the district, and was opened for automobile traffic coincident with its completion.

THE CAVE AND BASIN.

During the year the approaches to the road around the Cave and Basin were graded and rocmacked. A guard-railing of substantial design was built along the edge of the declivity facing the plain on the river's level, ornamental shrub plots were formed, and seats placed for resting places at the various vantage points surrounding and overlooking the building. These improvements were frequently commended by tourists who had known the spot in bygone days.

Another important permanent undertaking was the construction of a new power-house at the Cave and Basin. This work was finally completed and the heat turned on during the month of November. It involved considerable pile driving and a large

amount of solid concrete work, but the completed work will suffice for the requirements of the establishment, in this direction, for many years. This plant will also in the near future, I hope, when funds are available, produce the power necessary for the new steam laundry, besides heating the other buildings adjacent to the Cave and Basin, principally the bunk-house across the road, in which the power-house has its location. I hope also to see this bunk-house shingled, painted and generally put into finished shape, at an early date.

BUILDING.

Owing to financial stringency, building in the townsites was practically negligible as compared to former years, and for a like reason there were no extensions of the water and sewer systems, and few new connections. I hope we shall be able to take into consideration at an early date the extension of the sewer system on Cave avenue and the extension of both water and sewer mains on other residential streets in the town, notably Grizzly street, as the provision of these services tends to foster the building spirit among lot holders in Banff.

THE TOURIST TRAFFIC.

The tourist season, in point of actual numbers, was probably as good as ever before in the history of Banff, but there was this peculiarity that the season was not a good one from the point of view of the general caterer to the tourist traffic. During the whole season, from the latter end of May till the middle of October, special and ordinary trains, from both east and west, brought into town, daily, large crowds either going to or coming from the expositions on the Pacific coast. The bulk of this transient trade was handled by the Banff Springs hotel and the Brewster Transport company, and the usual length of stay of these parties was not more than twenty-four hours. For the general trade the month of August was the only good month. During this month, also, both cottages and hotels were well patronized.

Generally speaking, the whole season was excessively wet. There was one outstanding freshet which did a great deal of damage to roads and bridges; but there was some compensation, from our point of view, in the fact that beyond one or two incipient fires along the line of the C. P. R., we had no outbreaks to contend with in the park.

The whole park participated in the usual annual clean-up with very satisfactory results; and it is pleasing to note that a large and increasing number of the residents are taking a gratifying pride in the formation of tastefully laid-out lawns and gardens.

The town of Canmore still suffers from the absence of sewer and water systems; but so long as the financial situation remains in anything like its present state I may not ask that the outlay to institute these be sanctioned.

I have to report that all the park's staff continue to serve the interests of the department loyally, and that the ordinary work of maintenance has been carried out smoothly.

AUTOMOBILES.

The total number of automobiles registered in the park was over 250. There were approximately 250 transient licenses issued; ten owners took out livery licenses, and six private owners took out annual licenses, all three classes together being responsible for considerable new revenue.

During the year the old automobile regulations were relaxed to very considerable extent, practically the only roads in the park remaining closed to them being the Hot Springs road from Banff and the Minnewanka road from Bankhead, inasmuch as

points to be reached via the boulevard on the south bank of the Bow, and Beech avenue, may be got at with equal facility by other routes which are open to these machines. I agree, of course, that the present Upper Hot Springs road, in view of its many sharp turns, its inconsiderable width, and the declivitous nature of the south edge, is not suited for mixed motor and horse vehicular traffic, but in view of the importance of this road, with the Upper Hot springs and two hotels as its present objective, I hope that something will be done as soon as possible to put it into a reasonably safe condition for this traffic. Cutting off some of the corners which obstruct a view of approaching vehicles, and the erection of suitable substantial fencing at the edge of the worst of the declivities would, I think, in view of the increasing familiarity of horses here with the automobile, make it feasible to open this road to motors. I understand, further, that a scheme is crystallizing whereby an alternative return route may be provided, having its outlet on Spray avenue at the top of "Government Hill."

I regret I cannot see any immediate prospect of our securing money to put the Lake Minnewanka road, from Bankhead to the lake, into a condition for automobile traffic. Much of this road is of the hogback description, and it would either have to be very considerably widened or an entirely new auto road provided at certain bad places to justify the department taking the risk of opening this route to the lake.

The automobile road is in good condition from the eastern entrance of the park to Castle mountain.

Only two automobile accidents were reported in the park during the year. One car was burnt to scrap on the Bankhead road, and another was put over a declivity on the road some eight miles west of Banff, owing to an admitted error of judgment on the part of the chauffeur.

The new regulations were well and faithfully carried out by motorists, the only two or three cases of infraction being due to ignorance of the locality. After we were able to give out the new road map of the Banff district we had no more cases.

ROADS.

Apart from the automobile road, on the new work, which is dealt with separately, we only did one considerably big job in the way of roadmaking, involving the regrading, widening, and surfacing of Cave avenue, from the Cave and Basin to the Bow river bridge. The work was finished in September, and the road opened to automobile traffic, and I might say the finished job is now one of the very best of our many good roads in the Banff district. There is a driveway 28 feet wide and a footpath has been formed on the residential side of the road. In order that this latter should be properly finished it requires to be surfaced with cinders, which we might be able to do next year at inconsiderable cost, considering the distance. A considerable yardage of rip-rapping has been done in the formation of surface gullies and at culvert entrances, while paths and roads giving access to the various properties on the road have been graded to the new level. The trees that had to be taken down to give the increased width were saved, and will be used for fencing purposes as occasion arises. The remaking of this road gave much-needed employment at a time when it was much required, and also enabled us to keep the rock crusher gang and a number of teamsters employed.

We had a gang on the road from lake Louise to Moraine lake in an attempt to finish the work so well started in the previous year. Before the rainstorm already alluded to, a good deal of clearing and grading work was done, but the effect of the rainstorm, which lasted for about forty days in this district, was to practically nullify all the work that was done and to provide a lot more. I regret I had to take this gang off before very much could be done to repair the ravages of the storm. In my opinion it is very necessary that we should put on a gang for a whole season on this road, to put it in reasonably good condition. If this were once thoroughly done and the road

raked over in the spring, or early summer, to remove the stones coming off the mountains with the soft weather, complaints would cease. The policy of patching is a bad one and the most expensive in the case of a road like this, without being satisfactory, but with the money at our command during the past year we could hardly do anything else.

We also had a gang on the automobile road working westward from Exshaw to a point some miles beyond Canmore. Except for the damage (since repaired) done by the rainstorm this road was in fine condition from the eastern entrance of the park, right through to Banff, and thence to Castle.

Last year a proposed road from Georgetown to Canmore received some consideration from the department. Including two considerable bridges across the Bow and one of its smaller tributaries, the cost of this road was estimated at something like $30,000. In view of the fact that the road would have been essentially an industrial one, used mainly in connection with the mines, and that it did not from a parks' point of view open up new territory for tourists, the outlay was not considered justified in the present circumstances.

That part of the old road which forms a loop from the Spray bridge along the embankment at the junction of the Bow and Spray rivers has been put into condition, and is used by teams and rigs, giving the narrow part of the main road at this point over wholly to automobiles.

Some five or six years ago a high cribbed-fill was built where a coulée is crossed near mile 2 on the Spray road. In the month of June this was found to be in a precarious condition, the timbers having become rotten and too small for safety. The rain had soaked the earth-fill behind and pushed the cribbing out of place, the earthwork at the same time dropping down. The old wood was cleared away and new substantial cribbing of improved design substituted, and the fill replaced. This road is now in better shape than for many years, and continues to be a favourite one with tourists.

The following general road work may be grouped, as it concerns the less serious damage done by the June freshet: A number of fillings around culverts on the auto road were replaced; minor landslides on the road between the Gap and Exshaw and near Canmore were removed; Carrot (or Stoney) Creek bridge was repaired and strengthened; the cribs of the bridge near the five-mile post west of Banff on the automobile road were replaced and the structure put into repair; and two small culverts at the four-mile post where scouring and choking took place, were cleared and put into good condition.

Practically all the principal roads and trails have been marked by signboards for the direction of travellers, at a negligible cost, considering the convenience.

Some repair work was done on the Bankhead road at a point about half a mile west of the town of Bankhead, for the purpose of hardening the surface and eliminating humps.

MILEAGE OF ROADS IN PARK.

	Miles.
Castle to Vermilion	9
Kananaskis to Banff	35
Banff to Hot Springs	3
" Sundance Canyon	4
" Lumber Camp on Spray	8
Tunnel Moutain Drive	5
To Lake Minnewanka	9
Banff to Laggan	17·54
Laggan to Lake Louise	3
Lake Louise to Moraine Lake	9
Bankhead road to Buffalo Paddock	1
Loop Drive	7
Canmore Station to Mines	1·5
Town streets	6·33
Spray Bridge up River Spray (cut)	5
Total	123.37

SIDEWALKS IN BANFF.

We did not have occasion to add to the yardage of sidewalks in the town of Banff during the year, and I append a statement of the length and width of these paths as they now stand:—

GRAVEL Walks—Banff (Town).

Street.	From	To.	Side.	Length.	Width.
				Feet.	Feet.
Muskrat	Cariboo	Buffalo	East	710	
Elk	Banff Ave	Marten	East	282	
Otter	Buffalo	Moose	East and West	3,344	6
Muskrat	Buffalo	Wolf	West	1,344	6
Beaver	Buffalo	Cariboo	East and West	3,138	6
Buffalo	Bear	Otter	North	1,216	6
Bear	Buffalo	Cariboo	East	725	4·5
Bear	Cariboo	Wolf	East and West	800	4·5
Lynx	Cariboo	C.P.R. Station	East	1,800	6
Squirrel	Lynx	Elk	Southeast	627	4·5
Banff Avenue	Cariboo	Buffalo Paddock	Northwest	1¼ miles.	6
Beaver	Wolf	Moose	East	752 ft.	
Total				4 miles. 708 yards.	

GRAVEL Walks—Banff (Villa).

Avenue.	From	To.	Side.	Length.	Width.
					Feet.
Cave	Bow Bridge	Cave and Basin	East	1 mile.	6
Spray	Bow Bridge	C.P.R. hotel	East	3,600 ft.	6
Total				1 mile. 1,200 yd.	

STATEMENT of Plank Walks.

Avenue or Street.	From	To.	Side.	Length.	Width.
				Feet.	Feet.
Banff Avenue	Cariboo	Wolf	East	600	6·0
Cariboo	Banff Avenue	Beaver	South	260	4·5
Banff Avenue	Buffalo	Bow Bridge	East and West	700	4·5
Wolf	Banff Avenue	Bear	South	259	4·5
Total				406 yards.	

STATEMENT of Cement Walks.

Avenue or Street.	From	To.	Side.	Length.	Width.
				Feet.	Feet.
Banff Avenue.....	Buffalo.....	Wolf.....	East and West.....	1,425	12
Total.....	.....	.....	.....	475 yards.	

BRIDGES.

Early in the year it was necessary to re-floor the bridge over the Bow river at Canmore, which carries a great deal of heavy traffic annually, and which is the connecting link over the river between the mining sections and the railway. The smaller of the two bridges at Canmore was similarly treated owing to the floor having become worn to a dangerous thinness in so many places that patching work would have been false economy.

Following the removal last year of the Bow river bridge at Banff to a temporary site 75 feet east of the old site, the Department of Public Works did a considerable amount of drilling work on the old site for the purpose of ascertaining the nature of the probable foundations for the new structure. It would appear, from conversations with the engineer in charge, that while solid rock was not encountered to a depth of 75 feet, the intervening formations were such that there would be no difficulty in getting suitable foundations. The present bridge is of very limited width, and autos and rigs cannot safely pass. I shall be glad, therefore, when the work on the new bridge proceeds as, apart from being a convenience in the handling of cross-river traffic, the erection of the bridge will mean the provision of much needed employment for our resident population.

In the first week in July, following a period of almost continuous soft rain, a tremendous storm occurred all over the Rocky mountains, and almost unprecedented flooding took place. Rivers contained between high banks ordinarily giving a wide margin of safety, flooded many miles of surrounding areas, carrying off timber, lightly anchored houses, and, in one or two cases, further east, destroying life. Small streams became raging torrents, almost over night, causing bridges previously amply sufficient for their purposes, to become submerged and the approaches to be washed out.

Being so far in the mountains, and thus closer to the rivers' sources, the full force of the flood was not felt in the Rocky Mountain park as in the cities and towns on the prairies, but there was, nevertheless, considerable damage done to the bridges and culverts. For a period of about forty-eight hours considerable anxiety as to the stability of the Bow River bridge at Banff, in its new position, was felt, owing to the level of the water having risen practically to the top of the piers. Very little débris, however, came down the river, and the bridge stood the test well.

At the bridge over the Cascade river at Anthracite, however, we were not so fortunate. In the ordinary course this somewhat erratic stream may be crossed with the ordinary angling waders, in the neighbourhood of this bridge. This crossing consists of one-span steel bridge, 90 feet long, on the west channel, and three 24-foot wooden spans on the east side. The main channel formerly passed under the steel bridge, but this has been silted up and the main body of water now flows under the three approach spans, and scouring took place under the first bent from the east, and also behind the abutment. On the 5th July, when the water was at its highest, drift accumulated so quickly that we had the greatest difficulty in keeping the bents clear, as large portions became entangled between the posts, including a portion of a footbridge from Bankhead, which caught up in the first bent forming a barrier so that the water scoured the channel underneath to the extent that this bent dropped

about nine inches. A temporary crossing was made over this and we proceeded to build wings and backfill with rocks as there was danger of the earth approach falling in and carrying the temporary bridge with it. Strong cribbing work was done at the east approach, and traffic was not long delayed.

The same flood necessitated the closing up of the old bridge at Anthracite, commonly known as the "Duncan bridge," and owing to the financial situation it was found impossible to undertake the erection of a new bridge, although the matter has not been lost sight of against the time when conditions are better.

Some damage was also done to the approaches to other bridges and around culverts, notably on the automobile road, but our own staff was able to do the necessary repair work to restore passageway without any serious loss of time.

It is proposed to repaint and do some overhauling work at the steel bridge over the Bow at Castle during the coming year. The general work here has reference to the completion and securing of wheel-guards and the erection of either a lattice work fence or a handrail, while the approaches will have to be regraded. The débris that had accumulated between the old coffer-dam, used in the course of construction, and the piers, was cleared away in the month of April.

The centre pier for a new bridge over the Spray river 5 miles up the stream from the present Spray bridge at the junction of this stream with the river Bow, was put in under the direction of the resident engineer during the month of November. Fuller reference to the bridge, which was included in the scheme of work outlined for the aliens during the winter, is made in another part of this report, but it might be noted that while the bridge is a very substantial one, apart from the cost of labour, it was cheapened by the fact that the necessary lumber was cut from the right of way of the new road with which it connects.

TRAILS.

Three new trails were constructed during the year besides giving the usual attention to keeping the existing trails clear of fallen timber. The three new trails are: (1) From Spray bridge up mount Rundle to timber-line—distance, 3 miles. (2) Over Stoney Squaw mountain and Forty-mile creek up west shoulder of Cascade mountain to timber-line—distance, 6 miles. (3) From Brewster creek to Bryant creek—distance, 17 miles.

These twenty-six miles of new trails cost the branch approximately $2,600, and have opened up some interesting and desirable country to pony and pedestrian travel.

We also did some special work on the Ptarmigan Lake trail, prior to the formation of the Alpine Club's annual camp at this point.

TOTAL MILEAGE OF TRAILS IN PARK.

	Miles.
Spray to Mount Assiniboine	18
Banff to Spray Lakes and Eau Clair wagon road	28
Bow Summit	30
Banff to Fatigue Creek	19
Pipestone Trail	28
Cascade (Sawback to Bankhead)	28
Mount Edith trail to Sawback Lake	24
Lake Minnewanka trail	14
Banff to Simpson Summit	14
Canmore to Whiteman's Pass and Spray Lake trail	4
Tunnel Mountain trail	1½
Sulphur Mountain trail	3½
Carrot Creek and Lake Minnewanka	12
Red Earth Creek and Simpson Summit, via Mount Ball	17
Little Pipestone to head of Red Deer river	4½
Castle-Vermilion road to Twin Lakes	4½
Boom Creek bridge to Boom Lake	5
Spray bridge to timber line on Mt. Rundle	3
Banff to timber line on Cascade	6
Brewster Creek to Bryant Creek	17
Up Broom Creek (by our own warden)	2½
Total	283½

TRAILS IN THE PARK.

The following is a list of the trails in the park, compiled by the chief fire and game warden, with notes on the principal points of interest along their routes. (The distances given are only approximate, but do not in any case overlap.)

1. *Bow lake and pass.*—Thirty-three miles from lake Louise.

Points of interest: Bow valley, Hector lake or lower Bow valley, lakes Margaret and Turquoise, upper Bow lake, Bow glacier, Crowfoot glacier, Balfour glacier, Waputik icefields, mounts Gordon, Balfour, Bow, Pulpit, Portal, Observation, Dolomite, Peyto lake and glacier, Observation point, with wonderful view north.

Trail continues down Bear creek to the Saskatchewan, and thence in all directions.

2. *Molar pass.*—Twenty miles. From Bow trail to Pipestone trail. Mosquito creek, High pass, Molar creek, mount Hector and mount Molar.

3. *Dolomite pass.*—Nine miles from Bow trail to boundary of park. Trail continues down Doone creek to Siffleur. Dolomite pass, altitude 7,905 feet. Lakes Katherine and Helen.

4. *Pipestone Pass trail.*—Twenty-eight miles to summit. Altitude, 8,364 feet. Mounts Richardson, Hector, Molar, Cataract, many unnamed lakes, falls, caves, etc.; trail continues either down the Siffleur or over Clearwater pass.

5. *Little Pipestone trail.*—This can be followed either of three ways: To Red Deer summit, to Baker lake or to Ptarmigan lake, all of which are delightfully wild, each about 9 miles distant. Fourteen lakes can be seen from one point on this trail.

6. *Ptarmigan Lake trail.*—Twelve miles. Ptarmigan lakes, Baker lake, Carroll creek, mounts Fossil, Oyster, Ptarmigan, Pika, Redoubt; grand views to the south of the lake Louise mountains and Ten Peaks. Altitude of Ptarmigan lakes, 7,561 feet.

7. *Red Deer Summit and Douglas lake.*—Nine miles. North and south towers of mount Douglas, mount Drummond, Summit lakes, Douglas lake, Silver Serpent lake, Moonstone falls, Natural Bridge. Trail continues down the Red Deer.

8. *Baker Creek trip.*—Eleven miles. Baker Creek valley, mount Redoubt, Heart lake, and others.

9. *Johnson creek.*—Twelve miles. Canyon lakes, Castle mountain, Bonnet peak.

10. *From Baker to Johnson Creek.*—Eight miles. Summit lakes, etc.

11. *Hillsdale trail.*—Five miles. A short cut from Johnson creek to Hillsdale or Massive. Fine views up and about Bow valley.

12. *Mystic Lake trail.*—Eight miles. Leading from Johnson creek east, Sawback range, Mystic lakes, Forty-mile creek.

13. *Mount Edith and Sawback lakes.*—Twenty-one miles. Vermilion lakes, mount Edith pass, mounts Edith, Louise, Norquay, Sawback lakes, and creek to Cascade river.

14. *Flint and Johnson creeks.*—Ten miles. Flint park and Block mountain.

15. *Bijou Pass.*—Fifteen miles. Harrison lake and Panther falls.

16. *Cascade river.*—Twenty-three miles from Banff. Animal pasture, Bankhead coal mines, Stewart canyon, Cascade mountain, Stony creek.

17. *Cut Head and Wigmore.*—Twelve miles. Lakes, coal seams and Panther falls.

18. *Snow creek.*—Fourteen miles. Panther falls, Bare mountains, White creek, White mountain and Prow mountain.

19. *Panther river.*—Eighteen miles. Sulphur springs, coal seams, Panther mountain, White mountain.

20. *South branch of the Panther to Cascade.*—Twenty miles. Great game and fish country.

21. *Stony creek and Ghost river to Gap.*—Eighteen miles. Mount Aylmer, Castle Rock, Devil's Head, point where river disappears.

22. *Aylmer pass, lake Minnewanka and Ghost river.*—Thirty miles. Aylmer canyon and mount Alma, Costigan, Minnewanka, Inglismaldie, Girouard, Peechee, Devil's Gap, Saddle peak.

23. *Carrot creek to lake Minnewanka and South fork of Ghost river.*—Twenty-five miles. Peechee, Fairholme, Saddle and End mountains.

24. *Great Divide and Bath creek and lake O'Hara.*—Twenty miles. Daly and Niles glaciers, mounts Hector, Stephen, Cathredral, Field, Odary, Lefroy, Biddle, Wiwaxy peaks, Victoria, Park, Schaffer, Opabin; lakes Summit, Sink, Wapta, O'Hara, Oesa, McArthur and Grouse. Trail continues down McArthur creek.

25. *Lake Louise to Ross lake.*—Eight miles. Mount Niblock and Great Divide.

26. *Banff to Laggan, north side.*—Thirty-eight miles. Mounts Edith, Hole-in-the-wall, Bourgeau, Pilot, Massive, Castle, Ten Peaks, Temple, Hector and others.

27. *Upper lakes, Mount St. Piran and Little Beehive.*—Six miles.. Lakes in the Clouds, Louise, Mirror and Agnes.

28. *Grandview trail.*—Two miles. Birds-eye view of Victoria glacier and lake Louise.

29. *Lake Louise and Victoria.*—Four miles.

30. *Saddle peak and Sheol valley.*—Six miles. Fairview, Saddle and Temple.

31. *Paradise valley.*—Six miles. Mount Aberdeen, Horseshoe glacier, the Mitre, Pinnacle peak, Wastach pass, Eiffel peak, and mount Temple.

32. *Giant Step falls.*—One mile from main Paradise Valley trail.

33. *Lake Annette.*—One mile from main Paradise Valley trail.

34. *Sentinel pass* (altitude 8,556 feet.)—Seven miles. Between mounts Temple and Pinnacle. Larch valley, Ten Peaks and Moraine lakes.

35. *Moraine Lake trail.*—Nine miles. On base of Fairview and Temple. Carriage road. Ten Peaks, Bident, Quadra.

36. *Consolation lakes.*—One and one-half miles. Lake Bident and mounts Bident and Quadra.

37. *Wenkchemna valley and lakes.*—Five miles. Moraine lake, Wenkchemna lake and glacier. Ten Peaks, etc.

38. *Wenkchemna pass.*—Seven miles. High trail on Temple, Pinnacle and Eiffel. Prospector's valley.

39. *Vermilion pass and Boom lake.*—Twelve miles. Summit lakes. Boom mountain and lakes, mounts Storm, Whymper and Bident.

40. *Twin lakes.*—Five miles. Copper and Storm mountains.

41. *Copper mountain.*—Four miles. Copper mine.

42. *Red Earth creek and Shadow lake.*—Ten miles. Mounts Copper, Pilot, Ball and Brett, Shadow lake and many others. Canyon.

43. *Castle mountain to Banff* (south side).—Twenty miles. Mounts Copper, Pilot, Brett, Bourgeau, Healy creek, Sheep cave, Cave and Basin.

44. *Healy creek and Summit, high trail.*—Sixteen miles. Mount Bourgeau, Window-of-the-Gods (Hole right through the mountain). Simpson summit and lakes and view of mount Assiniboine.

45. *Healy creek, Simpson pass and head of Red Earth creek.*—Sixteen miles. Several lakes.

46. *Brewster creek.*—Fourteen miles. Fatigue mountains, Brewster glacier.

47. *Douglas creek.*—Seven miles. Summit lakes, etc.

48. *Sundance pass and around Sulphur mountain.*—Twenty miles. Sundance canyon, Eau Claire lumber camps, mount Rundle, Spray canyon.

49. *Hot Springs and Observatory.*—Six miles. Middle Springs, Kidney Springs, Government swimming baths at Hot Springs, Sulphur mountain and Observatory. Carriage road to Hot Springs, balance cinder path.

50. *Around Tunnel mountain.*—Four miles. Bow falls, Hoodoos, etc. Carriage road.

51. *Spray lakes, main trail.*—Thirty miles. Mount Rundle, Three Sisters, Spray lakes. Carriage road 6 miles.

52. *Spray River falls, Bryant creek.*—Sixteen miles. Spray falls, Bryant creek, mount Assiniboine.

53. *Main Spray river.*—Twelve miles. Goat range, Eau Claire camps.

54. *East branch of Spray to Mud lakes.*—Ten miles. Mud lakes and Hogarth lakes, southern boundary of park.

55. *From Head of Kananaskis to Spray.*—Ten miles. Mud lakes and Hogarth lakes, southern boundary of park.

55. *From Head of Kananaskis to Spray.*—Ten miles. Chain of four lakes, glacier, and fine peaks. Route along Continental Divide.

56. *Spray river, Palliser branch.*—Six miles. Cariboo lakes, Canyon, etc.

57. *South branch of Spray to Whiteman's pass.*—Six miles.

58. *Canmore to Spray trail.*—Four miles. Sulphur Springs, Whiteman's pass, Rundle, Three Sisters, Hoodoos.

59. *Kananaskis river and lakes.*—Thirty miles. Mount McDougall, Kananaskis range, Fishers range and lakes.

60. *Gap trail to Kananaskis valley.*—Ten miles. Pigeon mountain, Wind mountain.

61. *Up Boom creek.*—Thirty-one and one-half miles. Fishing and spawning grounds.

62. *Brewster creek to Bryant creek.*—Twenty-five miles. Alpine scenery. Trail crosses summit at 7,500 feet. Mount Cory is highest peak on trail.

63. *Up Cascade mountain.*—Six miles. Mountain and canyon scenery. Route can be travelled by pony to within easy distance of summit of mountain.

64. *Up Mount Rundle.*—Three miles. Alpine scenery.

N.B.—All mileage, except branch trails, starts from Banff or Lake Louise.

WATER AND SEWER SYSTEMS.

For a town of its size the water and sewer systems of Banff are described as unexcelled on the continent. Both systems, while being capable of considerable extension in the way of increased area of service, are in perfect condition and receive the unremitting attention of the permanent staff of the park. No extension of either system has been possible during the past year owing to the financial situation, but we shall be able to undertake this, where necessary, when the tension ceases.

The result of the periodical analysis of the water supply continues to give gratifying results both as to purity and clarity, although in the early part of the winter some trouble was experienced owing to frazil ice forming at the intake.

Some repair work was done at the intake during the year, including the repairing of the dam and the provision of new copper screens in place of those which had become incapable of dealing with leaves and other foreign matter which gets into the water in the autumn.

WATER MAINS—Banff (Town).

Street.	Mains.	Hydrants	Valves.
	Feet.	No.	No.
Grizzly	1,600	2	4
Banff avenue	6,495	14	6
Beaver	3,120	7	4
Muskrat	3,580	9	4
Otter	2,365	3	6
Bear	1,475	4	1
Buffalo	2,790	3	4
Cariboo	960	0	6
Lynx	1,300	3	5
Squirrel	2,210	6	
Elk	325	1	6
Marten	2,709	5	
Wolf	2,245	6	
	1,242		
Totals	118,096	64	61

Water Mains—Banff (Villa).

Avenue.	Mains.	Hydrants.	Valves.
	Feet.	No.	No.
Cave	5,340	8	5
Spray	2,925	7	7
Totals	8,265	15	12

Sewers—Banff (Town).

Street.	Mains.	Manholes.
	Feet.	No.
From Bear Cage to River	280	5
Lane between Grizzly and Otter	1,295	6
Cougar	1,513	
Banff Avenue	4,159	14
Beaver	2,917	12
Muskrat	3,865	14
Otter	2,310	8
Bear	1,458	5
Buffalo	1,400	
Cariboo	1,785	3
Lynx	1,233	3
Squirrel	2,191	7
Marten	2,164	9
Wolf	375	
Totals	26,945	86

Sewers—Banff (Villa).

Avenue.	Mains.	Manholes.
Sewer drain from marsh land to Bow River	4,642	14
River—from point opposite Sanitarium hotel to manhole where trunk sewer crossed Bow river	500	1
Trunk sewer (concrete) from Bow river opposite Muskrat street to outlet above falls	1,450	6
Totals	5,592	21

During the year we put in seventeen water connections and eleven sewer connections. This comprises the period from April 1 to October 1, by which time the weather conditions were becoming too rigorous for this class of work.

CONSTRUCTION WORK AT CAVE AND BASIN.

During the year a considerable amount of construction work was done in connection with the Cave and Basin bathing establishment. The preliminary work of pile driving to secure a foundation for the new power-house was done last year. The building has now been constructed; the connections have been made and the heat has been turned on. The boilers, besides heating the new bath-house, also supply heat to the old bunkhouse which was in use by the military authorities during the winter, and will, when the plant is installed and ready for operation, supply the power necessary for the new steam laundry.

The road around the bath-house has been regraded and roemacked. A branch road has been graded down to the bunkhouse, the precipitous edge of the road protected by a substantial rustic fence, and retaining walls built of sulphur rock. The road is in excellent condition, and the improvements, taken as a whole, are a fit setting for the handsome building at this point.

The slides at the pool have been covered with smooth oil-cloth, and a stream of water at 90 degrees, turned on to them. Two protective grills have been erected at corners which gave opportunity for persons to clamber through onto the walls, where there was chance of accident.

A small cold sulphur water creek above the bath-house was diverted from the pool supply with a view to improving the temperature; the belvederes, and some other apartments in the building were repainted on account of scaling, and a new keyboard provided. Eight jardinières have been placed at different parts of the building for ornamental purposes.

The action of the water and more or less constant use revealed several defects in the doors, both as regards material and hanging, and the matter is now in the hands of the commissioner's staff for adjustment.

The following other general work was undertaken: water attachments were made to the lavatories; cold water drinking fountains were installed; the letters and numbers for the dressing rooms were attached; a door was erected to prevent passage between the Basin and the old cool pool, which latter was kept filled for the use of the internes during the winter; the old boiler-house was removed; a number of rustic benches were made and placed on the various promenades and the upper belvederes; one hundred and forty-four stools were built by our own carpenters for the dressing rooms, and the rough ground behind the upper terrace was cleaned up, terraced, and seeded.

BUILDING PERMITS.

In every way—money, cost of materials, and weather—the year was an inauspicious one for building. With the exception of the new power-house and the winter internment camp, both at the Cave and Basin, the department undertook no new building operations of any moment. There were fewer than twenty new building

permits issued during the year, the total sum concerned being less than $10,500. When the financial situation improves, however, the indications are that there will be a recrudescence of the building trade, so far as private interests are concerned, in the different townsites throughout the park.

ELECTRIC LIGHTING OF BANFF.

The scheme for a generous extension of the street lighting system of the town of Banff, promulgated last year, was postponed for the same reason which compelled the postponement of so many other of our plans. There is, nevertheless, great need for this extension, and if we could place lights at the present dark street intersections and place more lights at the east end of Banff avenue, we would be able to get along without the larger scheme for a time.

Engineers were engaged during the year in the examination of the hydro-electric possibilities of Carrot creek, the Bow falls, the Spray river, and Forty-mile creek, and reports will reach the commissioner in due course. The time is ripe for the installation of our electric plant, and I would urge that it receive the attention of the department as early as possible.

TELEPHONE SYSTEM.

I had expected, before it became necessary to economize in every possible direction, that the new telephone exchange would have been installed in the new quarters in the fire-hall building, and that this would have given us a little more room in the present office for the staff in connection with museum and timber work. During the year, however, we were able to overcome the line congestion to a considerable extent by using parts of the new apparatus. In this way we provided over twenty new lines, which will be sufficient for new applications for some time.

The system is in connection with the Alberta Government's long-distance lines.

The following are details of the lines in use:—

To Bankhead	5	miles connecting	12	phones.
To Lake Minnewanka	8	" "	2	"
To the Observatory	4	" "	1	"
To Upper Hot Springs	3	" "	4	"
To Cave and Basin	1	" "	4	"

There are forty-eight business phones and twenty-nine private phones on the switchboard.

BANFF FIRE BRIGADE.

The apparatus, organization, discipline, and personnel of the Banff fire brigade continue to be of a very high standard. The organization is entirely voluntary, the only direct salary expense to the department being the monthly wage of a caretaker, who is on duty every day, to look after the cleaning and heating of the building and the care of the apparatus, and who is also an active member of the brigade. Two or three other members of the brigade sleep at the fire-hall and are always on hand for night calls. The members of the organization all live within close call of the building, and there is always a quick response to alarms.

A team of horses is also stabled at the building.

The chemical engine which we had on loan from the city of Calgary was returned in the month of May as being unsatisfactory. We hope to get it replaced by and by with a new machine to take care of incipient fires where it would be effective without the use of water from the main hose, and the consequent inevitable extra damage.

The hall itself is of a very comfortable description, the upper floor being devoted to bed-rooms and a large club-room, which is in constant use for the purpose of general organization. It is fitted with a handsome pool table and other recreational facilities. The lower floor is devoted to storing and caring for the apparatus.

Increased facilities are required for drying the hose after use, and this, together with requests for increased apparatus, is now under consideration by the commissioner. During the year, 500 feet additional hose of first-class quality was supplied.

There were two fires of considerable importance during the year. The first in the early morning of September 20, by which the Alpine block, owned by Hon. R. G. Brett, Lieutenant-Governor of Alberta, became a total loss; the second on the night of February 28, when the curio store and workshop of N. K. Luxton (Sign of the Goat Curio Co.) was completely destroyed. There were eight other small fires during the year, five of which were caused by overheated stovepipes. Two of these might have assumed considerable importance but for the assistance of neighbours, much valuable time being lost in giving notice of the fire, in one case the occupant of the house having to run half a mile on a snowy road to give the alarm.

MINING IN THE PARK.

While the mining claims in the park are entered with and handled by the Dominion Lands and Crown Timber Branch of the Department of the Interior, through the Calgary office, I am kept advised of the claims granted and have to report that about twenty such applications have been granted during the year. These refer principally to the location near Eldon station, where copper and gold are reported to have been found in paying quantities, and in connection with which at least two companies have been floated, at limited capitalization, for development work. These companies are named the Alberta Copper Company and the Calgary Copper Company.

A phosphate deposit was reported to have been discovered in the park in the course of the year, which, in view of its possible importance from an agricultural point of view, is being inquired into by government agents, and no claims are meantime being considered. It has not been finally decided as to the approximate yield or the area covered by the deposit.

RAILWAY UP CASCADE MOUNTAIN.

During the year a syndicate, headed by ex-Mayor Deacon of Winnipeg, received conditional authority from the department to build a railway up the south face of Cascade mountain, and some preliminary survey work was done in connection with the scheme. Mr. Harold S. Johnston, C.E., of Banff, led a party of engineers to the summit in the spring, and a full and detailed report is presently under consideration by the syndicate in question.

BOARDS OF TRADE.

There are two boards of trade in the park—at Banff and at Canmore—which are valuable bodies, inasmuch as they periodically discuss questions of importance to the park generally and their own districts particularly. I am indebted from time to time for valuable suggestions from both bodies, and their co-operation in the matter of the annual clean-up day was of real and valued assistance to the officers who had the general direction of the work.

In the course of one of the commissioner's visits to the West last year an influential deputation of the Banff Board of Trade convened with him in my office and discussed an agendum which embraced and helped to definitely clear up many phases of the park government.

NUISANCES AND SANITATION.

A method which we have found most successful in disposing of débris, which inevitably collects on premises during the winter and early spring, has been in vogue for the past two years. We hold throughout the park what is known as an annual clean-up day, usually in the month of May. Our spring cleaning this year was very thorough all over the park, many hundred loads of rubbish being either burned or dumped at suitable out-of-the-way places. Apart from the consequent diminution of the fly nuisance, this has caused in the various townsites a satisfactory increase of laudable endeavour to beautify and improve the value of lots by forming lawns, flower, and vegetable gardens. This tendency is most strongly in evidence in Banff, and can be extended to the other towns with profit to the lot holders.

A number of minor nuisances such as depredatory bears, and cattle and horses running at large outside assigned bounds, were dealt with, the former by means of the warden's rifles and the latter through the court.

A considerable number of dogs of uncertain and mixed breeds were despatched by the license inspector in the summer, with the consent of the reputed owners of these animals who did not care to pay the license fee.

ACCIDENTS

Beyond one case, where a yak in the buffalo inclosure butted the caretaker and inflicted some minor although painful injuries, there were no accidents to the employees of the department during the year.

One visitor to the park, however, met his death in tragic fashion. While the water was fairly high he rowed down below the Bow river bridge and, unheeding a number of warnings, proceeded until the boat was caught in the rapids above the falls, where he could do nothing to gain the bank and prevent his boat and himself being swept over the cataract. With the exception of a few of the furnishings of the boat nothing remained to indicate that an accident of the sort had taken place, and the body, at the date of writing, has not been found.

CEMETERIES.

Two cemeteries are administered from this office, Banff and Bankhead. The Banff cemetery is in good order in every respect. A good deal of work has been done during the past year, mainly in the way of keeping the place tidy, in a resurvey and in the identification and fuller registration of lots.

The Bankhead cemetery was located and put into commission during the summer in so far as two of the surveyed sections are concerned, and that portion of the ground which it is proposed to use first has been fenced and a roadway graded up the rising ground from the Lake Minnewanka road. The burials in the Banff cemetery have been about a normal number.

CANMORE TOWNSITE.

Besides the repairs made to bridges at this point, which are referred to elsewhere, a pavilion was erected at the recreation grounds for the use of the various athletic organizations using the playground. The building, which was constructed by local labour, is not of ornate design but is eminently useful in arrangement and is very much appreciated by the various clubs in the neighbourhood.

Some reference is also made to the question of a water supply in another part of this report.

During the year Mr. W. H. Evans was appointed the department's agent at this place, with excellent results in regard to the expedition of the department's business.

The building trade here, during the year, was by no means flourishing. A few buildings were completed and leases issued, but there were few applications for new lots.

ICE CUT.

The ice cut by the Brewster Trading Company this year amounts approximately to 11,000 tons (392 cars).

FIRE AND GAME WARDENS' DEPARTMENT.

The work of this department proceeded smoothly and efficiently during the year —protection of game, guarding against fire, cabin construction and trail clearing and building, all being thoroughly attended to, besides considerable extension taking place in the telephone system.

A trail, two and one-half miles in length, was constructed up Boom creek by one of our wardens.

FIRES.

We had no forest fires of any consequence owing to the extremely wet season, those which were reported occurring along the line of the Canadian Pacific railway and resulting in practically no damage. The early part of the season was so wet that the railway company was granted relief from fire patrol during April and ten days in May with the understanding that the patrol was to be provided on twenty-four hours' notice being given, but an application for further relief was refused. In all, I had reports of six of these incipient fires starting near the line of railway, all but one having started from railway sources. The exception was caused through carelessness by tramps. The worst of the fires damaged one and a half acres of grass. There were no fires in the park other than those mentioned, during the year.

Fire Precautions.

We purchased, during the year, a motor launch from Mr. William Mather, of Banff, for fire fighting and general purposes on lake Minnewanka.

A stock of strikingly effective metal notices, containing a joint warning and appeal in regard to the protection and extinction of fires, was received during the year. At the beginning of the season 600 of the 1,500 received were conspicuously posted all over the park with success, notwithstanding that the season was too wet to thoroughly judge the effect of these notices. They may now be met with on every road and trail in the park and there can be no excuse for carelessness through ignorance, in handling camp fires and smoking accessories. The two picture shows were supplied each with a set of three coloured slides containing equally effective warnings in the same connection, and these are shown on the curtain at every session during the fire season, free of any charge to the department. There was also distributed a large number of brass plates containing a concise warning regarding carelessness by driving and riding parties. This policy of driving home a warning in every possible way cannot fail to be productive of good results. Some thousands of artistically designed wall cards have been distributed and are hung in public places and in the rooms of the various hotels, while a movement is under consideration for the educating of the school children in the same direction.

A complete fire-fighting outfit, consisting of a Ford automobile with a suitable box body, a marine gas engine connected to a rotary pump capable of delivering a 40-foot stream through 800 to 1,000 feet of 1½-inch hose, and a portable gasolene engine, together with the necessary accessories, were supplied and gave excellent results at the tests made. This outfit should be of great practical value on routes over which the car can travel, as water is to be got within reasonable distance of all roadsides. I may also state that the car, apart from its value in connection with the pumping apparatus, has been of very considerable use in connection with the warden's branch of the work of the park.

A system of field telephones has been given a good start, and some further work was done on the heavier line started last year. A full report on the complete system can, however, very well be left till my next report, when we shall be able to go into it in detail, with possibly suggestions as to its further extension.

A very valuable look-out station in the Banff district, during the fire season, has been found to exist at the Observatory building on the summit of Sulphur mountain, where in dry seasons we have a man on duty all the time. During the year we put the telephone line between Banff and the Observatory into thorough order for this service, as well as for the use of Mr. Sanson on his periodical trips to the summit on meteorological work.

CABINS.

Six new wardens' cabins were built by the wardens themselves during the year, two of which are for winter use; and one cabin is in course of construction at Canmore and will be completed for occupation during the next year. Those completed are situated at Massive, Bankhead, head of Red Earth creek, Simpson summit, and head of Bryant creek. The policy of the department is to extend the system of cabins yearly until the whole area of the park is systematically provided for, and as the wardens do this important work themselves to a more or less standardized plan and specification, and as the equipment is also standardized, the cost of constructing and equipping these is minimized.

GAME.

All kinds of large and small game are very numerous in their different habitats within the park, and also in the preserve outside its borders, which our wardens also patrol. The vast number of deer in and close to the townsites is somewhat of a nuisance during the early fall owing to the damage they do to gardens, as no ordinary low fence will keep them on the outside. They are, however, a great source of interest to visitors, and the latter recommendation is probably a sufficiently general offset to the drawback referred to. In the mount Edith direction and in other parts of the park, large flocks of Rocky Mountain sheep may be seen daily, and they are so tame that many fine pictures have been taken at close range. The black bear is also very common, and not a litttle destructive, especially close to outlying houses in the Banff townsite. We had to order the destruction of one or two of these animals owing to successful raids which they made on outdoor larders, and one female killed for this reason near a house on the automobile road provided us with a pair of small cubs for our zoological collection at Banff. Goat and feathered game are also reported in large numbers in various localities.

VIOLATIONS OF GAME REGULATIONS.

There were two important prosecutions under the regulations governing the protection of game, both of which resulted in convictions and the imposition of penalties. The first which took place in September, concerned the killing of two goats and

involved two New York sportsmen and three guides. The heads were discovered by one of our wardens in a cache about ten miles on the Alberta side of the interprovincial boundary, and notwithstanding the assertion that the heads were got in British Columbia (the British Columbia goat season starts September the 1st.) and brought into the cache, the magistrate convicted all accused and imposed fines of $25 per head on each, making a total payment into court of $250, besides the expenses of the court.

The second charged offence took place in October and involved a Banff sportsman and a local guide. The case was a peculiar one in that the parties were out on the trail with a "camping and hunting license" issued by an employee of the Forestry Branch in the Calgary office, but did not take the route set forth in the register. They were followed, however, and were duly convicted, a fine of $50 each being imposed, together with the confiscation of the whole outfit, which included rifles, saddles, the usual camping paraphernalia, two sheep heads and ten head of horses. Full reports of these cases were duly sent to the commissioner at the time the cases were disposed of.

FISHERY REGULATIONS.

The fishery inspector reported only one case of violation of the fishing regulations during the year. Three miners from Bankhead were convicted and fined $25 each and costs for using night lines in lake Minnewanka

The flagrant use of dynamite, so common years ago, has, owing to strict guardian service, been entirely eliminated during the year.

With the hatchery at Banff introducing new species of game fish and turning into the lakes and streams in the park, many thousands of our best mountain game fish, a few years should see these waters well stocked, and a corresponding increase in the angling sport.

The spawning operations at Boom lake during May and June yielded about 160,000 cut-throat spawn, which developed, in the hatchery, into fine young fry, and which were turned into angling waters in October.

As a number of the mountain lakes are without fish owing to waterfalls, which are too high for fish to get up, every endeavour will be made, it is stated, to stock these waters.

A number of inquiries from outside points regarding seasons, regulations, and other allied questions were answered and pamphlets and guides sent out.

The superintendent of the fish hatchery reports that during the year 570,000 salmon trout and 90,000 Atlantic salmon trout were put into lake Minnewanka; 120,000 cut-throat trout, hatched at this establishment, were put into the various lakes and streams during the year.

The visitors to the fish hatchery were as follows:—May, 66; June, 372; July, 485; August, 557; September, 751; October, 107; November to March, 705. Total, 2,367.

BUFFALO PARK AND ZOO.

We had as usual a few losses both at the Buffalo Park and the Zoo, but, generally speaking, the health of the animals in both inclosures continued to be excellent.

In connection with the zoo, I have to record special thanks to Mr. Charles B. Horsbrugh, Red Deer, and formerly of Alix, Alta., for many free contributions he has made to our collection during the last year.

We have the following animals in the Buffalo inclosure at the time of writing: Buffalo, 13; moose, 8; elk, 28; mule deer, 10; white-tail deer, 2; Persian sheep, 6; Angora goats, 18; Rocky Mountain sheep, 17; Rocky Mountain goat, 3; four-horned sheep, 14; yak, 14.

In the zoo the collection consists of the following: Orange squirrels, 1; marmots, 4; mountain gophers, 4; black bears, 5; cinnamon bears, 1; grizzly bears, 2; polar bears, 1; mountain lions, 1; timber wolves, 3; coyotes, 5; badgers, 3; porcupines, 2; lynx, 3; red foxes, 6; white gophers, 1; black gophers, 1; silver pheasants, 3; golden pheasants, 4; Amherst pheasants, 2; Reeves pheasants, 2; common pheasants, 4; Canada geese, 3; golden eagles, 1; bald-headed eagles, 1; hawks, 7; owls, 2; pea fowl, 1; ringtail monkey, 1; Rhesus monkey, 2; pine marten, 5; fox squirrels, 3; black squirrels, 2; racoons, 2; turkey buzzard, 2; pelicans, 1; woodchucks, 1; seagulls, 1.

RECREATION.

During the year we were able to provide, at small cost, three first-class tennis courts on the recreation grounds near the pavilion, which were largely taken advantage of both by residents and tourists.

The area of these grounds contains all the essentials for practically every outdoor sport played in the country—baseball, football, tennis, field athletics, and cricket—but owing to the depletion of the ranks of our young men by enlistment there was not so much of the more strenuous description of sport indulged in this year.

There was at one time a suggestion that the football field should be adapted for pony polo, but the proposal did not materialize.

The proposal to put up a permanent toboggan slide could not be handled this year for lack of funds, but is being kept in mind.

The pony-hiring business was brisk during the greater part of the season, and a considerable number of hunting and exploring parties registered at Banff.

Both bathing establishments were again largely patronized, the large new pool at the Cave and Basin being very popular. This pool is probably the largest and best equipped outdoor pool in Canada, if not on the American continent and, besides the bathers, attracted large crowds of spectators to the galleries, daily, during the season.

The golf course was also largely patronized, especially during the month of August—the season, up till the end of that month, being spoken of as almost a record one.

During the winter Mr. Mather had the skating rink on the river and also had the curling rinks in hand. While in point of numbers there was not the usual attendance, the provision of these facilities for winter sports was very much appreciated.

ANGLING.

There are no official means of keeping record of the principal catches of fish, and any statement of actual numbers must be based on averages in certain districts. I have reason to believe, however, that especially in the lakes at a considerable distance from the centres of settlement, good catches were made. I have heard of parties having good sport at Spray lakes, Mystic lake and Minnewanka, and one or two good ones are reported as having been taken out of the Bow river at Castle and near Canmore. This river, however, was very high and muddy during the greater part of the season and did not give the usually fair sport during at least two months in the height of the season. I am hopeful that results will soon be apparent from the operations at the fish hatchery.

FISH HATCHERY.

Although this hatchery is handled by another department it is of the greatest interest to the Parks Branch as the reason for its establishment was the restocking of the angling waters within the Rocky Mountains park. Being in operation for less

than three years, it is too early yet to speak of results, but very large numbers of young fish of various kinds have been turned into lakes and streams in the park, and in all probability there will be an excellent return in the course of the next few years, which will justify the establishment's existence and, the widening of its scope.

The superintendent of the hatchery, in his scheme of improvement and beautification of the grounds, has wrought a wonderful change at a point which might formerly have been called an eyesore. The ground has been graded, lawns have been formed, and ornamental ponds in which mature trout have their home, have been constructed. The whole establishment is a model of order and cleanliness, and with the draining of the small sulphur water slough at the rear of the premises the place is a credit to the park, and is a continual point of interest to visitors, who come there to look over the work, in large numbers.

CAMPING IN THE PARK.

There was a considerable falling-off in the number of individuals and parties camping in the park during the year, both in proximity to the townsites and in the mountains. This was principally due to weather conditions.

The permanent camps at lake Louise, lake Agnes and the camp at the Alpine Club were well patronized.

Attention was given to shack tents which remain up from year to year and are thus liable to become dilapidated, but little difficulty was experienced in getting owners to look after these places and to keep them in tidy repair.

EMPLOYEES ON ACTIVE SERVICE.

The park as a whole has done magnificently in sending her young manhood to the front, and in common with most of the other eligible young men in the park many of our own employees have gone to Europe and are upholding the best traditions of the British race. I am in receipt of frequent communications from the boys at the front, and am glad to be able to record that promotion is rapidly coming to a great many of them.

GENERAL NOTES.

New maps and guides to the Banff district were available for distribution towards the latter end of the season, and were in strong demand. Our large supply of parks' literature was entirely cleared out by the beginning of October, except for the general guide referred to.

Owing to the shortness of the money market, it was decided not to hold a sale of lots during the year. A few lots were offered for application but applications did not ensue. A considerable number of agreements were cancelled owing to the non-compliance with conditions, and also at the request of holders who saw no prospect of being able to build during the year.

During the year we have received every possible assistance, as usual, from the members of the detachment of the Royal Northwest Mounted Police. The personnel was changed entirely once during the year, but this made no difference to the usual courtesy and attention to duty, which marks this corps in the west.

S. J. CLARKE.

APPENDIX 2a.

REPORT OF THE CURATOR OF BANFF MUSEUM.

The number of visitors to the museum was far in excess of any previous year, accounted for by the great number of Americans travelling to the San Francisco exhibition.

Mr. Harlan I. Smith, archaeologist, of Ottawa, arrived about the end of June and immediately proceeded to continue his work of last year—that of improving the appearance of the exhibits, etc., in the museum, and having additional cases made.

Cases were made for the buffalo, for the ptarmigan, two extra Herbarium cabinets (much needed), and several nicely made signs were added during the time Mr. Smith was here.

During the past winter I got many natural history, etc., notes of back years into better shape.

The literature on park subjects issued by the Parks Branch for free distribution was eagerly taken up by visitors to the museum, same soon being exhausted, so great was the demand.

The pamphlets consisted of: The first edition of the museum catalogue; The Fish of the Rocky Mountains Park; Geology of the Park; Glaciers; and the last Annual Parks' Report.

BIRDS.

I kept track of the wild bird arrivals last spring and early summer. This is useful information to have and is quite a help in getting a knowledge of our park birds.

I was surprised to see a western robin and a tree swallow about lake Myosotis, altitude over 7,000 feet, Ptarmigan valley. The only other birds seen in this valley were: Swainson's Rosy Finch (on the mountains), and a ptarmigan and chicks.

During the migratory season in spring and early summer, quite a few birds evidently (during the night flights, etc.) come in contact with the wires about Banff, as dead birds are to be found every year.

Bird arrivals to date this spring: Swainson's Rosy Finch (*Leucosticte tephrocotis*) in very large flocks—first seen March 12; Western Robin (*Planesticus migratoria propinqua)*—first seen March 18; Mountain Bluebird *(Sialia artica)*—March 19; Juncos—March 14.

The Western horned owl is increasing in numbers, at least around Banff. As it destroys many mice it should not be interfered with.

The American dipper *(Cinclus mexicanus unicolor)* has been accused of eating fish fry. But I decidedly say it is not guilty. Its habit of taking the larvæ of water insects, etc., which cling to and are under rocks, etc., at the bottom of running streams, sometimes where fish fry may congregate for their own feeding, may have been the reason for the old idea that the water ousel, as it is sometimes called, lived on fish fry. I have never yet seen this bird with fry in its bill, and I have watched it time and again while performing its most interesting and various methods of diving, running along the bottom of rapid running streams, etc.

The dipper remains with us all winter, and is supposed to sing more in the fall and winter, than in summer. It has no bad habits and should never be interfered with. Last January at a temperature of 27° below I saw one of these birds dive over and over again, remaining under water for some time and on emerging from the water stand on the ice—in what was the only open-water of a pond and it evidently enjoyed this.

INSECTS AND SPIDERS.

I collected in all orders of insects during the season, and spiders, and was fortunate in having quite a number of moths, beetles, bees, wasps, caddis flies, etc., and spiders, identified by different specialists.

On my fortnightly trips to the meteorological station I collected material, especially on my returning—taking a different slope or gully each trip. In this way I descended all the descendable gullies of Sulphur mountain facing east.

In caddis flies a new species was collected.

In spiders two new species of jumping spiders were collected.

On May 21 and 22 I had two days collecting with Mr. F. W. L. Sladen, Dominion Apiarist, during which quite a few bees were collected—Mr. Sladen arranging others previously collected for the museum.

September 14 and 15 I accompanied Dr. C. Gordon Hewitt, Dominion Entomologist, on trips of investigation into mosquito areas about Banff, and sent him all the museum's collection of mosquitoes for determination.

October 4 and 6 I went with Mr. J. M. Swain, M.Sc., assistant entomologist for forest insects, Ottawa, to bark beetle localities about Banff, where Mr. Swain secured many specimens, and I received information. Before leaving Mr. Swain kindly went over the museum beetles, naming the same, and others were sent to him later on.

In the Ptarmigan valley I collected quite a few different insect genera on Ptarmigan mountain glacier, at an altitude of about 10,000 feet; the season was rather poor on account of so much rain.

The butterflies in this valley were alpine, mostly chionobas, colias, Argynnis, and Anicia species.

FLORA.

On July 20 I left for the Alpine Club camp in Ptarmigan valley.

The flora of this valley (altitude about 7,000 feet) is mostly alpine and arctic. Many plants were over flowering on my visit. Some of the more noticeable were: *Anemone occidentalis*—western anemone; fairly common, and seeding. *Anemone drummondii*—Drummond's anemone. *Anemone globosa*—the vari-coloured anemone. *Thalictrum occidentale*—western meadow rue; abundant Red Deer valley. *Ranunculus eschshaltzi*—mountain buttercup. *Aquilegia flavescens*—yellow columbine. *Trollius laxis*—Globe flower. *Delphinium* sp.—larkspur. *Actaea rubra*—Baneberry. *Papaver alpina*—arctic poppy; never common. *Myosotis* sp.—forget-me-not; abundant. *Pedicularis bracteosa*—bracted lousewort; a draft form, abundant. *Castilleia miniota*—mountain Indian paint brush. *Castilleia pallida*—white Indian paint brush.

A number of sheets of plants were added to the herbarium, among them fifty sheets of grasses.

On August 5 I had an outing with Dr. Malte, Agrostologist of the Experimental Farm, Ottawa, during which grasses were collected for the museum herbarium, and information obtained.

In fungi I collected some, and with previously collected specimens, was fortunate in having them named by Prof. A. Murril, Ph.D., of the New York Botanic Gardens.

The tree case in the museum was about completed, five specimens being added, viz., Mountain balsam fir, Engelmann's spruce, white-barked pine, and Alpine larch.

FOSSILS.

A few were collected in Ptarmigan valley.

CRUSTACEÆ.

In parts of lake Minnewanka early in May there were vast numbers of a minute red crustacean known as coppepoda. Dr. C. Gordon Hewitt, Dominion Entomologist, says these form one of the chief articles of diet for fish.

ADDITIONS TO THE MUSEUM.

No. 93. Grizzly bear head.
No. 94. Little chipmunk from valley.
No. 95. Little chipmunk from Sulphur mountain.
A good specimen Dolly Varden trout (*salvelinus parkei*) from Spray river near the Spray lakes—weight, 6 pounds.
No. 459. American coot.
No. 460. Mearnsi Junco.
No. 461. Mearnsi Junco.
No. 462. American Redstart.
No. 463. White-winged crossbill—male.
No. 465. Wilson's snipe—male.
2 skins Thick-billed redwing.
The Wilson's snipe had a 2-inch or so long stick imbedded in the flesh and bone of the primary wing when caught by Wm. Fife, game and fire-guardian; perhaps the bird had flown against the branch of a tree while fleeing from a hawk.

The weather report is appended.

Of the winter weather, January was by far the coldest of any month in any year since the Banff meterorological records have been kept, viz., 1888. The mean temperature for the month of January, 1916, being —13·02, whereas the lowest mean temperature of January before was —3,0°, in 1894.

The spring of 1915 was much earlier than usual, and after a comparatively wet June and July (which caused some local damage in small floods) the remainder of the year was more dry, the year ending with very little really cold weather.

After January, 1916, and the first week of February, which were excessively cold, the weather became comparatively mild, with a genuine chinook on February 14, etc., when the weather was pleasant for some days. March was moderately mild, with a foot or more snowfall.

The mean temperature for February, 1916, was 15°,6, and for March, 1916, 27°·9.

A peculiar overturning of temperature took place most of January, the very cold strata of air in the valley possibly reached to 6,000 feet or so altitude, while above that 6,000 feet or so altitude the temperatures were as a rule higher even to very much higher.

On the 23rd January in the valley we had a blizzard, the maximum reaching only to —23°·5. This blizzard only reached to half-way up Sulphur mountain or so, and the maximum temperature on top of Sulphur mountain was 22° above zero, or 45·5° higher maximum temperature on top of Sulphur mountain than in the valley.

NORMAN B. SANSON.

APPENDIX No. 2b.

THE ALPINE CLUB OF CANADA.

BANFF CLUB HOUSE.

The Alpine Club House, at Banff, was, as usual, open all the season of 1915 for the accommodation of members and their friends. The attendance was good considering the large numbers of members of the club who are serving their country.

As in other years, many strangers, mostly this season from the United States, came for accurate information about the mountains. Apparently the Alpine Club is the only body which has such information available, and to disseminate it is one of the main objects of its existence.

Several ascents were made of Mts. Rundle, Cascade and Edith. Various expeditions were also made to Mt. Assiniboine, but the uncertain weather prohibited climbing that fine peak.

Visiting members expressed great delight at the new bath accommodation at the Cave and Basin, but wondered much that no bridle path was cut through the woods from the Middle Spring road to the lower baths—a work of no great difficulty. This would make a pleasant circular tour from the Bow Bridge to the Upper Springs and back by the Cave and Basin to the bridge again. Members look forward to the day when the Upper Springs will also be suitably equipped.

Visitors to the Club House were drawn from the following places:—

CANADA—

British Columbia—Revelstoke, Sidney, Vancouver, Vernon, Victoria, Wilmer.

Alberta.—Calgary, Didsbury, Edmonton, Green Court, Lethbridge, Macleod, Sarcee Camp, Tomahawk, Vegreville, Westlock.

Saskatchewan.—Prince Albert.

Manitoba.—Portage la Prairie, Winnipeg.

Ontario.—Ottawa, Toronto.

Nova Scotia.—Windsor.

UNITED STATES—

Connecticut.—Waterbury.

Illinois.—Chicago.

Indiana.—LaFayette.

Massachusetts.—Wellesley.

Maryland.—Baltimore.

Minnesota.—Minneapolis.

New Jersey.—South Orange.

New York.—Brooklyn, New York.

Virginia.—Alexandria.

Pennsylvania.—Pittsburgh.

ENGLAND—

Darwen.—London.

NEW ZEALAND.

THE ALPINE CLUB OF CANADA—PTARMIGAN LAKE CAMP.

The tenth Annual Camp of the Alpine Club of Canada was held in the Ptarmigan Lake valley, a few hundred yards below the pass, from July 13 to 26, 1915. This delightful region is but little known, and it is hoped that the action of the club in holding a camp in it, and the consequent wide attention directed thereto by influential members who were present, by newspaper reports, and by the club's own publications, will render it more familiar to the world at large.

It is easy of access, being but eight miles or so north of Lake Louise station along a plain if boggy trail.

For the first week the club experienced the worst weather it has ever "enjoyed" at a camp. Heavy falls of wet snow rendered climbing too dangerous to be attempted, and camp conditions by no means of the pleasantest. However, every one present made the best of things like true sportsmen (and women), and when the fine weather came later appreciated it all the more.

A subsidiary camp was placed at Hatchet lake on the divide between the waters of the Red Deer and the Bow rivers, a delightful neighbourhood, quite unknown, and very convenient for the ascent of either the White or Black Douglas.

One of the great charms of this region is the number of little mountain lakes it contains. From the summit of Ptarmigan peak, sixteen were counted of varying size.

Among the principal ascents made were: Black Douglas (11,015 feet), mount Richardson (10,115 feet), Ptarmigan peak (10,060 feet), Pika peak (10,015 feet), and mount Redoubt (9,510 feet). Pika peak affords a really fine rock climb, worthy to be compared to the Dolomites, which present European conditions render unattainable. The White Douglas was impossible owing to the dangerous condition of the snow.

There were many attractive expeditions through the various valleys, and good fishing was obtained in the Pipestone creek in spite of the abnormally high water.

A distinguished feature of the camp was the "patriotic night" held around the camp fire. Nearly seventy members of the club are under arms for their country; their names were recalled and a standing vote of appreciation was passed. Account was given of the motor ambulance which the generosity of the club has provided for wounded soldiers. Several of the members have been severely wounded, one is a prisoner in Germany, but so far none has been killed. Several have been mentioned in despatches for distinguished conduct, Major Hesketh has received the D.S.O., and many have been promoted. W. N. Rowell, M.P.P., leader of the opposition in the Ontario legislature, made a stirring address. American members expressed keen sympathy with the Allies, and the meeting closed with an impressive singing of the National Anthem, in which the mountains around joined with their echoes.

Owing to war conditions the attendance was much smaller than usual; 103 being placed under canvas, and twenty-three members graduating to active rank. Among the more notable present at the camp and the club house were: Jas. Macoun, C.M.G., Assistant Dominion Naturalist; N. W. Rowell, M.P.P., the Hon. Mr. Justice Galt, of Winnipeg; Mrs. Henshaw, the noted botanist, who is honorary secretary of the club; and Frank Yeigh, the well-known author and lecturer. In the scholastic world, well-known names were: Dr. W. E. Stone, President of Purdue University, Indiana; Prof. A. G. Christie, Johns Hopkins University, Baltimore; Prof. C. B. Sissons, of Toronto; Mrs. Vincent, the wife of the President of the University of Minnesota; Miss Gena Smith, the principal of Edgehill College, N.S.; and Miss Virtue, the head of St. Alban's College, Prince Albert.

There were present members of the English, Swiss, American, and New Zealand Alpine Clubs, of the Appalachian Mountain Club, of the Mazemas and of the Royal Geographical Society

Those present at the camp were drawn from the following places:—

CANADA—

British Columbia.—Invermere, Revelstoke, Vancouver, Vernon, Wilmer.

Alberta—Banff, Calgary, Cowley, Edmonton, Green Court, Iron Springs, Lethbridge, Macleod, Sarcee Camp, Tomahawk, Westlock.

Manitoba—Virden, Winnipeg.

Ontario—Ottawa, Toronto.

UNITED STATES—

Indiana—LaFayette.

Massachusetts—Boston.

Maryland—Baltimore.

Minnesota—Minneapolis.

New Jersey—Summit.

New York—Brooklyn, New York.

Virginia.—Alexandria.

Pennsylvania.—Pittsburgh.

ENGLAND—

Darwen.

SWITZERLAND—

Interlaken.

Several independent exploratory expeditions of importance were made by club members. Miss Jobe again visited the neighbourhood of mount Alexander Mackenzie; Professor Holway climbed mount Longstaff and mount Fitzhugh (wrongly called Geikie by the people of Jasper). A large party of members, including Mr. and Mrs. A. H. MacCarthy of Wilmer, and Dr. and Mrs. Stone of LaFayette, Indiana, explored and made many first ascents in the Southern Selkirks. To the North Fork of the Illecillewaet two separate expeditions were made by Dr. J. W. A. Hickson, of Montreal, and Professor Sissons, of Toronto, respectively.

It is a notable result of the growing interest in the mountains created by the club that many members were unable to secure the services of the trained Swiss guides, as their time was fully occupied. Not many years ago they were more or less ornamental adjuncts of the hotels.

APPENDIX No. 2c.

ANALYSIS OF NATIONALITIES OF VISITORS TO ROCKY MOUNTAINS PARK.

Bathers and Visitors at Upper Hot Springs, April 1, 1915, to March 31, 1916:—

Canada	11,435
United States	559
England	68
Scotland	27
Ireland	10
France	4
Australia	7
Total	12,110

Bathers and Visitors at Cave and Basin, April 1, 1915, to March 31, 1916:—

Number of bathers passing through turnstile	23,262
Visitors to cave	23,197
Total	46,459

Visitors to Cave from:—

Canada	8,531
United States	14,450
England	50
Scotland	10
Ireland	3
Australia	75
New Zealand	45
South Africa	5
Argentina	9
China	4
Japan	15
Total	23,197

Visitors to the Museum:—

Canada	5,150
United States	6,240
England	184
Scotland	61
Ireland	19
Wales	5
Australia	50
New Zealand	11
Tasmania	3
South Africa	3
West Indies	4
Jamaica	2
China	12
Russia	4
Hong Kong	4
Argentina	8
Cuba	4
Norway	1
Holland	11
France	1

Spain	1
Greece	4
Italy	8
Hawaii	2
Porto Rico	8
Switzerland	12
Japan	8
	11,820
Unregistered estimated	3,000
Total	14,820

Visitors to Fish Hatchery:—

May	66
June	372
July	485
August	557
September	751
October	107
November to March	705
Total	2,367

Number of visitors registered at the Alberta hotel, 1915-16:—

Canada	2,134
United States	482
Australia	14
New Zealand	1
England	4
Japan	3
Tasmania	2
India	2
China	1
Scotland	1
Total	2,644

Numbers of visitors registered at The Homestead and Bungalow Temperance Hotel, from February 20, 1915, to March 31, 1916:—

Canada	1,097
British Isles	5
India	3
Australia	7
United States	888
Total	2,000

Number of visitors registered at Sanatorium Hotel (closed in early fall):—

England	3
Australia	5
Canada	1,137
United States	1,204
Total	2,349

Number of visitors registered at King Edward Hotel, April 1, 1915, to March 31, 1916:—

Canada	3,111
United States	2,350
Australia	18
New Zealand	10
England	27
Belgium	3
Ireland	3
Total	5,501

Number of visitors to Hot Springs hotel, April 1, 1915, to March 31, 1916:—

Statistics not available, estimated	2,500

Mount Royal Hotel, Banff, from March 27, 1915, to December 3, 1916:—

Figures not available, estimated total	3,500

Number of visitors registered at Grand View Villa (closed in early fall):—

Canada	187
United States	86
England	1
Scotland	1
South Africa	1
Hawaii	2
Total	278

Statement of Persons registered at Banff Springs hotel, Banff, Alta., season 1915:—

Manitoba	36
(Winnipeg)	291
Saskatchewan	159
Alberta	755
British Columbia	182
Total	1,423
Yukon	2
Newfoundland	6
Prince Edward Island	1
Nova Scotia	27
New Brunswick	23
Quebec	226
Ontario	649
Total	934
Maine	79
New Hampshire	43
Vermont	63
Massachusetts	667
(Boston)	896
Connecticut	321
Rhode Island	103
New York	1,070
(New York City)	2,331
Pennsylvania	590
(Pittsburg)	281
(Philadelphia)	893
New Jersey	975
Delaware	50
Maryland	443
District of Columbia	272
W. Virginia	86
Virginia	174
Total	9,346
Kentucky	116
Tennessee	104
North Carolina	54
South Carolina	38
Georgia	145
Alabama	98
Mississippi	51
Louisiana	152
Florida	51
Total	809
Ohio	614
(Cleveland)	212
(Cincinnati)	219
Michigan	311
(Detroit)	237
Indiana	336
(Indianapolis)	86
Illinois	570
(Chicago)	1,611
Iowa	427
Total	4,623
Missouri	73
(St. Louis)	293
(Kansas City)	152
Kansas	72
Arkansas	56
Oklahoma	30
Nebraska	89
(Omaha)	31
Texas	113
Total	909
Wisconsin	212
(Milwaukee)	139
Minnesota	209
(Minneapolis)	278
(St. Paul)	105
North Dakota	71
South Dakota	38
Total	1,052
Washington	88
Oregon	69
California	119
(San Francisco)	90
(Los Angeles)	95
Nevada	1
Total	462
Montana	12
Idaho	10
Colorado	24
Utah	3
Arizona	6
Total	55

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West Indies	38
Mexico and Central America	10
South America	13
Total	61
England	79
Ireland	3
Scotland	19
France	14
Italy	5
Belgium	7
Switzerland	3
Germany	2
Holland	7
Other European countries	6
Total	145
Australia	50
New Zealand	27
China	20
India	14
Hawaii	14
Philippine Islands	2
Asia	5
Total	132

Conducted Parties (otherwise unlocated).

Raymond & Whitcomb	436
T. Cook & Sons	193
Gillespie, Kinport & Baird	612
Marsters	252
Delta Tours	38
Gatis Tours	113
Honeyman Party	23
Dean Tours	76
Total	1,743
Unlocated	325
Total, 1915	22,019
Total, 1914	8,022
Increase	13,997

Statement of Persons registered at Chateau Lake Louise, Lake Louise, season 1915:—

Manitoba	31
(Winnipeg)	147
Saskatchewan	122
Alberta	396
British Columbia	127
Total	823
Newfoundland	1
Prince Edward Island	2
Nova Scotia	19
New Brunswick	29
Quebec	158
Ontario	516
Total	725
Maine	120
New Hampshire	55
Vermont	106
Massachusetts	946
(Boston)	1,020
Connecticut	439
Rhode Island	145
New York	1,405
(New York City)	3,043
Pennsylvania	628
(Philadelphia)	825
(Pittsburg)	388
New Jersey	860
Delaware	57
Maryland	498
District of Columbia	307
West Virginia	97
Virginia	239
Total	11,158
Kentucky	170
Tennessee	189
North Carolina	67
South Carolina	61
Georgia	159
Alabama	113
Mississippi	48
Louisiana	189
Florida	54
Total	1,050
Ohio	988
(Cleveland)	624
(Cincinnati)	396
Michigan	507
(Detroit)	341
Indiana	622
(Indianapolis)	150
Illinois	947
(Chicago)	2,190
Iowa	880
Total	7,667
Missouri	142
(St. Louis)	562
(Kansas City)	181
Kansas	122
Arkansas	33
Oklahoma	66
Nebraska	178
(Omaha)	42
Texas	159
Total	1,485
Wisconsin	441
(Milwaukee)	210
Minnesota	280
(Minneapolis)	558
(St. Paul)	239
North Dakota	136
South Dakota	86
Total	1,950

Washington	147
Oregon	87
California	197
(San Francisco)	25
(Los Angeles)	132
Nevada	4
Total	662
Montana	8
Wyoming	2
Idaho	12
New Mexico	2
Colorado	30
Utah	2
Arizona	9
Total	65
Alaska	1
West Indies	26
South America	9
Mexico and Central America	9
Total	45
England	105
Ireland	5
Scotland	11
France	14
Spain	2
Belgium	1
Switzerland	2
Holland	11
Other European countries	3
Total	154
Australia	41
New Zealand	16
Japan	6
China	13
Hawaii	28
India	7
Philippine Islands	8
Africa	5
Total	124

Conducted Parties (otherwise unlocated).

Raymond & Whitcomb	814
Frank's Tours	34
T. Cook & Son	116
Marsters' Tours	134
Gillespie, Kinport & Baird	323
Honeyman's Tours	23
Total	1,444
Unlocated	364
Total, 1915	27,716
Total, 1914	8,280
Increase	19,436

Special Parties handled by Railway Company during season of 1915.

June 4. New England Wholesale Grocers.
American Iron, Steel and Heavy Hardware Association.
W. H. Woods' party to Northern Baptist Convention at Los Angeles.
National Grocers' Association.
" 5. Raymond & Whitcomb private car party (Car Twilight).
Ray & Whitcomb private car party (Clarkson Cowl and family).
Governor of New Jersey and party.
" 6. McFarland party.
" 7. National Wholesale Grocers' Assn.
" 8. Raymond & Whitcomb Alaska Tour No. 50.
Delta Tour No. 1.
Honeyman's party.
" 12. Women's Club Tour.
National Assn. for the Study and Prevention of Tuberculosis.
" 14. Pros. Baumgartner's party (Tourist Sleeper East 37).
" 16. Raymond & Whitcomb Tour 43.
" 19. National Electric Light Assn.
American Library.
" 20. Krueger Assn. Tour.
McFarland party.
" 24. Senator Oliver private car party.
E. H. Ellison's private car party.
" 27. Windsor Record contest party.
" 28. Raymond & Whitcomb Tour 48.
Thos. Cook & Sons Tour T.
Raymond & Whitcomb Tour 56.
" 29. Draper-Kramer Tour.

July 1. Y.M.C.A. Boys from Chicago.
" 5. Boston Teachers' Club.
Beacon Tour No. 60.
July 6. J. M. Miles private car party.
Eugene Atwood private car party.
Gillespie, Kinports & Baird's Tour C.
Raymond & Whitcomb Tour 111.
Thos. Ryan private car party.
" 7. Frank Tour Co. Tour F.
Murat Shriners.
Adkar Bedowin and Mirza Shriners.
Richmond Shriners.
" 8. Mecca, Almas, Kismet, Bourni and Crescent Shriners.
Savanah Shriners
McCann's Tour Shriners.
Southern Shrinedom.
Escanaba and Copper County Shriners.
" 9. Alcazar Temple Shriners.
Lu Lu Temple (three sections).
Saladin Temple.
Alexander's Tour.
" 10. National Laundryman's Assn. party.
Dr. Holmes' private car party.
Syria Temple Pittsburg Shriners.
Zenobia Temple Shriners.
India Shrine.
Sons of American Revolution.
McFarland tour party.
" 11. Austin Texas Shriners.
" 12. Rev. C. A. Kelly's party.
I. A. Place, private car party.
" 13. Raymond & Whitcomb party. De Lux party.
Raymond & Whitcomb Pilgrim Tour J.
National Assn. Real Estate Exchange.
Gillespie, Kinport's & Baird's party. Tour C.

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Special Parties handled by Railway Company during season of 1915—*Concluded.*

July 14. Service Tour F.
Troy Hill Maennerchoer Club.
Gillespie, Kinport's & Baird's party.
" 15. Col. T. T. Smith's party.
F. P. Phillips' private car party.
" 16. Gillespie, Kinport's & Baird's Tour S.
Gillespie, Kinport's & Baird's Tour X.
" 18. E. E. Taylor's private car party.
Governor Dunn's private car party.
" 19. Frank Tour De Lux No. 10.
Ancient Arabic Order of Shriners.
Gillespie, Kinport's & Baird's Tour Y.
" 20. W. H. Woods Stanley party.
Raymond & Whitcomb Tour 60.
McFarland Tour.
" 22. American Wine Growers.
International Milk Dealers.
" 24. Rochester House party.
Kistler-Marshall party.
" 26. Delta Tour special car party.
New England Elks.
Gattis Tour No. 2.
Raymond & Whitcomb Tour 7.
Hiram Sibley private car party.
" 27. Henry C. Cox special car party.
B. & P. Order of Elks. Boston Lodge.
Raymond & Whitcomb Pilgrim Tour L.
" 28. Universal Church Convention.
" 29. Maharajah of Kaparthala private car party.
Dr. H. H. Rusby's party.
O. L. Hall's party.
Jersey City Elks.
Cincinnatti Chamber of Commerce.
Prof. Sherzer's party.
Mass. Knights of Columbus.
" 30. Mrs. E. Cuthbert's Tour.
Raymond & Whitcomb Nat. Educational party.
International Assn. of Rotary Clubs.
" 31. Marsters' United Drug Co., special.
Aug. 1. Rotary Club.
" 2. National Assn. of Deaf and Dumb.
Raymond & Whitcomb Tour 73.
" 3. Gillespie, Kinnott's & Baird's special.
Raymond & Whitcomb Tour M.
Frank Tourist party F.
" 4. Gillespie, Kinport's & Baird's Special Tour A.
Gillespie, Kinport's & Baird's Special car party Z.
Gattis Tour 4.
National Tax Assn. party.
" 5. Associate Collegiate party.
Bureau of Universal Travel.
Mr. Chas. E. Beury private car party.
Foresters of America special train.
" 6. McFarland Tour.
" 7. Knights of Columbus.
Raymond & Whitcomb Pilgrim Tour A-E.
" 8. Dean party.
Taggart Tours.
Rex Tour.
Jones' Southern party.
" 9. Raymond & Whitcomb Tour 119.
" 10. Service Tour G.
Mrs. Meadows' Tour.
Raymond & Whitcomb Tour M.
" 11. Frank Tourist Co. Tour 2.
Aug. 12. De Lux Tour Co.
" 13. A. A. Crane private car party.
" 14. Mrs. Alexander's party.
" 15. A. K. Carter's special train.
F. Brady, private car party.
" 16. Raymond & Whitcomb Tour 104.
" 17. Sanger's Tour.
Frank Tourist Co. 3rd Tour F.
Raymond & Whitcomb Tour D.
" 20. American Pharmaceutical Assn.
McFarland Tour.
" 23. Raymond & Whitcomb Tour 123.
Fraternal Order of Eagles.
" 24. Raymond & Whitcomb Tour P.
Temple Tour No. 342.
" " 25. Prof. McKean and party.
Gregory Tour No. 5.
" 27. Frost Wire Fence special.
" 28. Bankers' special car party.
Minnesota Educational Tour N.E. 4.
" 30. Stoddard party.
F. H. Ellison's private car party.
" 31. Frank Tourist private car party.
Reading Frisco Club.
Thos. Cook & Sons Tour B.
Maryland Special Tour.
Raymond & Whitcomb Pilgrim Tour Q.
Sept. 1. Tour B White Section American Bankers.
New England American Bankers.
Supreme Court Foresters of America Special.
" 2. Marster's Tours.
Penn. Bankers Tour de Lux.
Ohio Bankers Special Train.
" 4. Oklahoma Bankers Special.
Raymond & Whitcomb Tour 164.
" 5. Gillespie, Kinport's & Baird's Tour E.
Pan American Road Congress.
" 6. Raymond & Whitcomb Tour 143.
T. W. Lamont private car party.
" 7. Raymond & Whitcomb Pligrim Tour R.
McFarland's Cal. Tour.
" 11. Rochester's Second House party.
" 12. J. E. Weaver private car party.
" 13. Raymond & Whitcomb Tour 142.
" 14. Raymond & Whitcomb Tour S.
" 17. Gillespie, Kinpott's & Baird's Tour N-11.
" 18. Emery W. Clark private car party.
" 19. Hon. J. R. Yale private car party.
" 20. National Assn. of Stationers.
W. H. Sage private car party.
" 23. Gregory Tours.
" 25. Raymond & Whitcomb Tour 170.
" 27. Raymond & Whitcomb Tour 154.
C. Oliver Iselin private car party.
" 28. Frank Tourist Co., Tour F.
American Institute of Architects.
Raymond & Whitcomb Pilgrim Tour U.
" 29. W. P. Snyder's private car party.
Mr. Carl Stoeckel private car party.
Oct. 3. International Engineering Congress.
" 4. Raymond & Whitcomb private car party (Misses Smith).
" 5. Raymond & Whitcomb Tour party.
Gates California Tour party.
" 8. Gillespie, Kinport's & Baird's Tour C-11.
Marster's California Tour Special Train.
" 9. Raymond & Whitcomb Tour 176.

Special parties handled by Brewster Transport Company.

	Parties.	Persons.
June	21	788
July	138	6,115
August	98	5,092
September	63	3,043
October	16	462
Total	336	15,500

SUMMARY.

Banff Springs hotel	22,019
Chateau Lake Louise	27,716
King Edward hotel	5,501
Hot Springs hydropathic hotel	2,500
Mount Royal hotel	3,500
Grand View hotel	278
Alberta hotel	2,644
Homestead (Temperance hotel)	2,000
Sanatorium hotel	2,349
Summer cottagers and campers (estimated)	6,000
Excursionists handled by Brewster Company	15,500
Total	90,007

Special parties otherwise unlocated:—

Handled by tourist agencies	134
By private cars	49

APPENDIX No. 2d.

TIMBER AND GRAZING.

The following comprises the second annual report of the Timber and Grazing Inspector for the Rocky Mountains park for the year ending March 31, 1916.

I wish to say that large bodies of dry timber are to be found all over the park, and it seems that in the early days of the park no particular locality was immune from the destructive effects of forest fires, whether they were near the railroads or at some distance.

A peculiar thing that I noticed during the past season, was that in one locality where we were doing some excavating at a depth of four feet I found that the soil had been burnt, on top of this was a deposit of two feet of soil and indications of another fire, then a deposit of one foot and another fire, and then a deposit of a foot on the surface of which trees were growing at least one hundred and fifty years of age, so that it looks to me as if fires swept through this country long before the advent of the railroads.

During the past season, on account of a bountiful supply of moisture and more care being exercised by tourists and others, we have had no fires in the park that caused any damage to the growing timber.

In former years the Canmore Coal Company and McKay, Pennycook & Jackson had men working in the vicinity of Spray lakes, but during the last season no operations were conducted there.

The largest body of dry timber within the confines of the park lies in the valley of Brewster creek, but on account of its inaccessibility and distance from any shipping point no one has yet attempted to operate in it.

During the past winter three different companies have been operating along the automobile right of way over the Vermilion pass, taking sawlogs, mining props, and cordwood, and at the present time there is a portable saw-mill engaged in cutting sawlogs into lumber at Castle mountain and shipping it to Calgary and other prairie points.

The return for the past season's cut at the above points are not yet in, but I should judge that at least 2,000 cords of wood and some saw timber had been taken out.

Several different parties have been taking out cordwood and mining props at Stephen, west of lake Louise, but on account of the great depth of snow I should judge that not more than 2,000 cords would be taken out at this point.

The Canadian Pacific Railway have taken out in the vicinity of their hotel at lake Louise about 1,000 cords, but as they have not yet made their returns this is an approximate estimate.

I might mention that within the park bounds considerable mining activity had been displayed during the past summer, one talc claim being located in the Vermilion pass and two copper claims being opened up near Eldon on the C.P.R. line—one of these companies shipping out a number of cars of copper ore to the smelter at Trail, and the other company doing considerable development work.

Twenty-nine grazing permits were issued during the past season; this is a substantial increase over former years—this increase was brought about by compelling parties who had animals running at large to pay up.

On account of copious rains last summer the feed in the park was exceptionally good and the number of animals pasturing within its bounds can be materially increased without encroaching on the pasturage of wild animals.

J. F. MORRISON.

APPENDIX No. 3.

REPORT OF THE SUPERINTENDENT OF YOHO AND GLACIER PARKS.

Owing to the war conditions which have existed throughout the past year this has been in many ways a peculiar year for the Dominion parks, and I venture to say that they have fully proved their worth and justified the expenditures which the Government has thought fit to make on their development from year to year, coming to the country's aid in its time of need.

During the past season thousands of American tourists have visited Canada, and to the great majority of these the Dominion parks have been the principal attraction. It is hard to realize the amount of money that has in this way been left in the country—money which, although it does not go directly into the pocket of the Government, still goes to the Canadian people, at a time when most needed. To the war we are indebted in a large measure for this unusually large tourist travel through our country, travel which, having its usual avenues of recreation shut off, was attracted by such features as the Dominion parks of Canada, which are without question among the foremost of the drawing cards which the railway companies and tourist agents have to offer the public.

In the Yoho and Glacier parks, during the past season, all hotels and private houses that had accommodation to offer have been filled to capacity with tourists, who, coming for the first time to visit us were eager to see all, were delighted and will come again if they are able, or those who having been before were returning to again take in the grandeur of our mountain scenery.

With reference to the work that has been undertaken in these two parks during the past season, I beg to report as follows:—

YOHO PARK.

The first work undertaken was the usual cleaning up in the townsite of Field. This we commenced as soon as the weather would allow, which was early in April. A number of vacant lots were cleaned up and all refuse carted out to the nuisance ground; streets were raked over and gravelled; sidewalks repaired; and about fifty new trees planted along the streets to replace those that had died or failed to take root. In May a small gang of men were started to work on the Yoho road, who at once went roughly over the whole road in order to open it up at once for travel, after which they completed the widening of the second Yoho canyon, which was all solid rock; the road between the first and the second canyons for a distance of about half a mile was also widened out and gravelled. At the switchback we put in a log cribbing for almost the entire length on the inside of the road, and replaced the old guard-rail, which was very light, with a good solid one made of peeled poles, for the full distance of this piece of road.

Considerable time was also devoted to the new diversion between the four- and five-mile posts on this road. At this point there is a very heavy cut on a steep grade and the sides of the cut on the upper side of the road had to be sloped to an angle sufficient to keep the material from constantly falling in and blocking the road. On this grade a guard-rail was also erected for the entire length of the grade. On the Emerald Lake road two sectionmen worked for the most of the summer and kept this road in excellent shape. No new work was undertaken, but on account of the wet season, and the heavy travel on this road they deserve great credit for the condition which it was always in, having nearly nine miles of road under their care. The Hector road was also gone over and cleaned up. No new road work of any kind was undertaken during the past season, but all existing roads were maintained in first-class condition.

TRAILS.

Two new trails were cut out and graded during the summer: One from lake O'Hara down McArthur creek to connect with the Ottertail trail, and the other from a point on the Emerald lake road up the Amiskwi valley to the boundary of the park —a distance of 15 miles. A cabin for the use of our fire wardens was built at a convenient spot on each of these trails. All the other existing trails in the park were cleaned out and kept in repair by the fire wardens. A new warden's cabin was also built at Takakkaw falls, which was the headquarters of Warden Howatson; and the footbridge over the Yoho river, which was washed away during the previous season, we replaced with a more substantial structure.

I cannot speak too highly of the work done, and the efficiency shown by the fire wardens in the park during the last fire season. They proved themselves to be a most useful body of men, and were of great value to me in conducting my work. Many small fires which might have developed into serious ones had they not been immediately extinguished, were attended to by them, and I am pleased to be able to report that outside the salaries of these men, not one dollar was spent for extinguishing forest or other fires, while a large amount of actual work was accomplished by them.

GAME.

Game in this park, I am sorry to say, is not as plentiful as I should like to see it, and I hope the time is not far distant when all game within the park limits will be protected as it is in other Dominion parks; the resident within the park will then have better hunting than he has now, by going a short distance outside the park area. Goat and bear are fairly abundant; there are some moose, and both white- and black-tailed deer.

GLACIER PARK.

At Glacier, as in other Dominion parks, the past season taxed the hotel accommodation to its limit in its endeavour to accommodate the large number of tourists who wished to stop off in the park. From Glacier House both the Asulkan and the Illecillewaet glaciers can be readily reached, either by pony or by a short walk, over excellent trails. Another very popular trip is that to the Nakimu Caves—being about 7 miles from the hotel—which will well repay the tourist for his stop-over; these can be best reached by pony. Unfortunately, owing to war conditions, we were not able to complete the road, which is now under construction, this year, but had to be content with keeping in repair that portion already built. For the first time, this summer, there was a regular stage making trips twice a day over this road. Most of the people who travelled by the stage, however, missed the attraction of a visit to the Caves owing to the team being unable to complete the whole distance. At the Caves we are fortunate in that we have been able to retain the services of Mr. C. H. Deutschman, their discoverer, as caretaker. During September, Mr. O. D. Finnie, inspecting engineer of mines for the Department of the Interior, made an extensive survey of a part of those caves at present not accessible to the public, and as a result it was found that by making about 15 feet of a tunnel in the rock a good entrance to the caves could be obtained; this work I would like to do as soon as conditions allow.

At Glacier this summer we filled a long-felt want by building a cabin for the use of our fire wardens stationed there. This cabin was mostly constructed by the wardens themselves, the only extra expense to the Government being that of the material used. It has been much admired by the many tourists passing it.

TRAILS.

All existing trails were gone over and cleared out just as soon as the season would allow, after which Mr. Calder, who was in charge of this work, moved over to Bear creek with a small party of men and commenced work on the new trail from there up the Beaver valley. This trail we completed for a distance of about fifteen miles from Bear creek, which has opened up a large part of the park formerly difficult of access.

During the month of December, quite an important event occurred at the Rogers Pass tunnel, when the centre headings, which the contractors have been working on from both ends, met in the centre, thus making a hole through this mountain, 5 miles in length. The contractors are still making very fast time with this work, and it is anticipated that before next winter the trains will be running through this tunnel. In connection with this work I am pleased to be able to report that the best of feeling exists between the park's officials and the tunnel authorities, who at all times have been most willing to assist us in the protection of the park's interests.

In this park I am also able to report the expenditure of not one dollar for forest fires, except the salaries of the wardens.

Statement of persons registered at the Mount Stephen House, Field, B.C., season 1915.

Manitoba	12
(Winnipeg)	112
Saskatchewan	24
Alberta	773
British Columbia	1,026
Total	1,947
Nova Scotia	1
New Brunswick	7
Quebec	62
Ontario	209
Total	279
Maine	29
Vermont	27
New Hampshire	23
Massachusetts	167
(Boston)	133
Connecticut	73
Rhode Island	27
New York	198
(New York City)	378
Pennsylvania	100
(Philadelphia)	133
(Pittsburg)	46
New Jersey	92
Delaware	9
District of Columbia	48
West Virginia	61
Virginia	15
Total	1,577
Kentucky	21
Tennessee	7
North Carolina	14
South Carolina	6
Georgia	8
Alabama	5
Louisiana	14
Florida	34
Mississippi	3
Total	112
England	44
Ireland	2
Scotland	2
Australia	13
New Zealand	19
China	6
Hawaii	2
Total	88
Ohio	3
(Cleveland)	139
(Cincinnati)	56
Michigan	89
(Detroit)	45
Indiana	86
(Indianapolis)	16
Illinois	122
(Chicago)	301
Iowa	133
Total	1,034
Missouri	27
(St. Louis)	78
(Kansas City)	49
Kansas	24
Arkansas	7
Oklahoma	4
Nebraska	25
(Omaha)	14
Texas	18
Total	246
Wisconsin	51
(Milwaukee)	23
Minnesota	53
(Minneapolis)	90
(St. Paul)	43
North Dakota	32
South Dakota	18
Total	310
Washington	17
Oregon	14
California	42
(Los Angeles)	35
(San Francisco)	16
Nevada	2
Total	126
Montana	3
Idaho	4
Colorado	4
Arizona	1
South America	5
Mexico	4
Total	21
Unlocated	10
Globe Tours	12
Total, 1915	5,763
Total, 1914	3,010
Increase	2,753

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Statement of persons registered at Emerald Lake Chalet, Emerald Lake, B.C., season 1915.

Manitoba	3
(Winnipeg)	53
Saskatchewan	20
Alberta	137
British Columbia	97
Total	309
Nova Scotia	10
New Brunswick	4
Quebec	39
Ontario	677
Total	130
Maine	7
Vermont	2
Massachusetts	61
(Boston)	73
Connecticut	17
Rhode Island	13
New York City	338
New York	52
Pennsylvania	36
(Philadelphia)	143
(Pittsburg)	18
New Jersey	56
Delaware	6
Maryland	18
District of Columbia	22
West Virginia	5
Virginia	4
Total	872
Tennessee	3
North Carolina	6
Georgia	6
Mississippi	9
Alabama	4
Louisiana	8
Florida	3
Total	39
Ohio	32
(Cleveland)	31
(Cincinnati)	13
Michigan	9
(Detroit)	23
Indiana	10
(Indianapolis)	6
Illinois	49
(Chicago)	115
Iowa	16
Total	304
Missouri	5
(St. Louis)	43
(Kansas City)	8
Kansas	3
Nebraska	12
Texas	28
Total	99
Wisconsin	13
(Milwaukee)	31
Minnesota	10
(Minneapolis)	63
(St. Paul)	24
South Dakota	2
Total	143
Washington	15
Oregon	21
California	39
(San Francisco)	41
(Los Angeles)	31
Nevada	2
Total	149
Montana	1
Colorado	5
Utah	1
Total	7
England	45
Ireland	1
Scotland	13
France	6
Germany	3
Holland	2
Total	70
Australia	3
New Zealand	5
Japan	2
China	1
Hawaii	2
India	4
Total	17
Total, 1915	2,139
Total, 1914	1,035
Increase	1,104

Statement of persons registered at Glacier House, Glacier, B.C., season 1915.

Manitoba	8
(Winnipeg)	51
Saskatchewan	41
Alberta	114
British Columbia	296
Newfoundland	2
Total	509
Nova Scotia	14
New Brunswick	11
Quebec	60
Ontario	144
Total	229
Maine	53
New Hampshire	23
Vermont	43
Massachusetts	434
(Boston)	454
Connecticut	190
Rhode Island	79
New York State	578
(New York City)	916
Pennsylvania	338
(Philadelphia)	850
(Pittsburg)	255
New Jersey	540
Delaware	24
Maryland	161
District of Columbia	18
West Virginia	8
Virginia	70
Total	5,065
Kentucky	60
Tennessee	64
North Carolina	42
South Carolina	18
Georgia	105
Alabama	42
Mississippi	15
Louisiana	45
Florida	20
Total	411
Ohio	314
(Cleveland)	192
(Cincinnati)	123
Michigan	210
(Detroit)	125
Indiana	62
(Indianapolis)	727
Illinois	215
(Chicago)	360
Iowa	248
Total	2,587
Missouri	56
Cleveland	160
Kansas City	48
Kansas	56
Arkansas	5
Oklahoma	19
Nebraska	74
Omaha	6
Texas	53
Total	480
Wisconsin	122
(Milwaukee)	57
Minnesota	75
(Minneapolis)	167
(St. Paul)	51
North Dakota	44
South Dakota	21
Total	537
Washington	176
Oregon	12
California	63
(San Francisco)	101
(Los Angeles)	71
Total	423
Montana	7
Idaho	8
New Mexico	4
Colorado	13
Arizona	5
Alaska	5
South America	7
Total	49
England	133
Ireland	1
Scotland	3
France	2
Italy	1
Switzerland	3
Holland	5
Denmark	1
Total	149
Australia	22
New Zealand	9
Japan	3
China	7
India	14
Africa	1
Total	56
Unlocated	134
Total, 1915	12,977
Total, 1914	4,009
Increase	8,968

Conducted Tour (otherwise unlocated).

Raymond & Whitcomb	969
T. Cook & Son	202
Gillespie & Kinports	241
Alexander Tours	193
Frank's Tours	153
Gattis Tours	171
Miss Florence Rohr	17
Dean Tours	74
Knights of Columbus	53
Temple Tours	33
Gregory Tours	73
Bankers' special party	30
National Association Stationers	45
International Engineers Congress	30
Gates Tours	32
Total	2,359

APPENDIX No. 4.

REPORT OF BUFFALO PARK.

The year's operations have been very successful indeed. The season having been early, every advantage was taken to prepare the land for seeding on the area broken the previous year, in addition to the acreage from which an excellent crop was produced last year. There were approximately some 470 acres planted with oats at winter quarters, and some 32 acres at the north end. The seed was selected from the grain grown on the farm the previous year; it was put through the fanning mill and then through the pickling machine, after which it was drilled in and the land well packed down with the new packer which was purchased. This careful preparation of the seed-bed and subsequent operations, together with an excellent rainy season, resulted in an exceptionally heavy crop, both of grain and straw. The yield was 30,222 bushels of high-class oats and some 240 bushels of wheat which had been sown experimentally on some 6 acres of stubble land. Approximately about 11,000 bushels of oats were shipped to the Rocky Mountains, Jasper, and Elk Island parks for their use; thus effecting a considerable saving in the cost of purchasing locally, and demonstrating that Buffalo park is capable of growing all the grain required for its own use, as also that of other parks, leaving a considerable surplus on hand for a year when crop conditions are not so favourable as those of the season of 1915.

The season was so wet it was fortunate that there was a good supply of hay on hand from last year; this, added to the quantity cut, wherever and whenever it was possible during the intervals of favourable weather, and to the extra heavy straw yield from the 470 acres, gave an assurance of plenty of feed for the increasing herd of buffalo.

The bison did not come into winter quarters until a later date than the previous year. They were in remarkably good condition, with the exception of a number of cripples, which had met with injuries in the constant fights for supremacy which take place among the buffalo. I am constrained again to advise that if the best results are to be obtained we must, as early as possible, divide the park with cross-fencing into areas suitable to form breeding, bull, and mixed stock pastures, together with a suitable corral for sorting out and handling the buffalo.

FENCING.

A new high fence of woven wire was erected to take the place of the old one which was too low to be of use in keeping the buffalo out of the winter pasture and feeding grounds. The old fencing was taken up and utilized for inclosing the horse pasture and a portion of the grain fields. A new fence of standard height of 7 feet was put up, thus shutting out the bison from the area around the stables and other buildings, and preventing them from breaking through the low fence surrounding the grain fields, or feeding whenever so inclined at the straw stacks.

The fencing around the main park was gone over, and where posts were decayed, the old ones were removed and new planted. A portion of the fencing on the west side near Rocky Ford cabin crossed a muskeg, and was a continual cause of trouble; this was rectified by removing the fence and building it on higher ground. Some experimental concrete posts were made and placed in position on the fence line, but their dimensions were such as to make them too heavy and costly for handling, consequently all were not utilized.

During the month of June some person or persons maliciously cut the main fence in several places with the object of letting the buffalo and deer escape from the park; the damage was detected and repairs made, but the guilty party was not found. The farmers on the west side made application for gates to be placed in the main north and west fence, in order to enable them to haul their produce to market by the shorter route through the park. Their request was granted.

THE GRANARY.

A new granary and implement shed was constructed, the upper story to be used as storage for some 5,000 bushels of oats, the floor as an implement shed, or should there be an excess of grain, such as there was this year the whole building can be utilized as a granary. The dimensions are 32 feet by 48 feet; there are six bins in the upper story, with an 8-foot driveway separating them; trap-doors in this latter for dropping the surplus grain to the lower floor, and spouts from the bins for sacking and loading. The lower floor is closed in permanently on three sides; the fourth or front side can be closed temporarily when grain is to be stored on the lower floor. This arrangement is very convenient, and the building is quite an important addition to those already at winter quarters.

TELEPHONES.

An up-to-date telephone system was installed to replace the old one. It was a most necessary addition to the park, and in the future the line should be extended from Alexander's gate to Rocky Ford by way of the proposed wardens' lodges at the gates on the north and west main fence lines.

ANIMALS IN THE PARK.

With regard to the animals in the park, the year has been, on the whole, a very successful one. There was an increase of 442 buffalo calves, with a decrease of 14, making a total of 2,077 buffalo now at Wainwright.

During the Christmas season, seven old bulls were killed to save the heads and robes. One head and robe were donated to the University of Saskatchewan. Last summer a buffalo cow was loaned to the city of Toronto; and two other buffalo have been loaned to the city of Guelph. These latter are now in the corrals being fed and tamed prior to shipping them to their destination.

The moose have thriven, and there are now sixteen. The elk are doing well, and show an increase of fourteen, and there is a large number of mule deer.

The animals now in Buffalo park are as follows:—

Buffalo	2,077
Moose	16
Elk	57
Mule deer	100
Antelope	3

The feathered game is very plentiful, and the sportsmen of the district have the Buffalo park sanctuary to thank for the good bags they have been able to secure outside the boundaries of the park.

The total number of visitors to the park during the year was approximately 1,623. The wet season had a good deal to do with the decreased patronage.

P. C. BARNARD-HERVEY.

APPENDIX No. 5.

REPORT OF THE SUPERINTENDENT OF ELK ISLAND PARK.

Few improvements were made this year, owing to war conditions.

The usual cleaning of the grounds took place in the spring, raking up the ground and hauling away the garbage, also fixing over the picnic grounds for the summer. These latter are very much appreciated by the public.

FIRE-GUARDS.

In the spring, before it became too dry, I took one man with me and rode around the park burning all long grass along the fence, as an extra precaution against fire.

I had the fire-guard ploughed during June and July. As we had a very wet season the grass and weeds grew very rapidly, so that it was necessary to disk it again in October. I think it will do now until next fall, when it will need a good ploughing to put it in shape for another year.

FENCING.

The fences required an amount of careful watching last year as the posts were in such poor condition. We set tamarack posts in at intervals to strengthen it, and I hope to have posts in this year to put in in first-class shape.

HAYING.

We started haying in the latter part of July, under very fine weather conditions, which prevailed throughout, and we got up about two hundred tons of very good hay. The hay land which we have reserved on the Cooking Lake forest reserve, is so very rough that I intend in the spring, before it gets too dry, to go with two or three men to burn it over, collect the rubbish and cut some bush which interferes with the working of the mower. By so doing, we shall be able to get much more and better hay.

ROADS.

Last year, only just enough road-work was done to keep the roads in passable condition, but they will require much more work this season.

ANIMALS.

The animals are in fine condition. The increase in the buffalo is not so large as last year, being twelve, with no loss. One aged cow in very poor condition was killed last fall, also one bull that was disabled by a wound in the hip. The heads and robes were shipped as directed.

The moose are doing splendidly, as this park is their natural habitat. I counted seven calves this year, making a total of thirty-nine moose in the park. While riding I saw three young elk, so they are increasing, and judging by the tracks I estimate about

ninety deer in the park. In a few years this park will be overstocked with these animals, and I should recommend that it be extended south into the Cooking Lake forest reserve. The summer pasture also is too small for the number of buffalo, and when we have to let them out into the larger park, a great many visitors who come on purpose to see the buffalo, are disappointed.

BUILDING LOTS.

Numerous inquiries have been received in past seasons concerning lots on which to build summer cottages. I should like to see lots to be leased for a number of years surveyed on the lake shore and some of the islands. I believe if this were done, Elk Island park would soon become one of the finest and most favoured summer resorts in northern Alberta. Many inquiries have also been made in regard to the completion of the Sandy Beach road.

VISITORS.

During eight months of this year we had a total of 1,121 visitors.

NUMBER OF ANIMALS.

The total number of animals in the park is as follows:—

Buffalo	106
Moose	39
Elk (estimated)	50
Deer "	90

ARCHIBALD COXFORD.

APPENDIX No. 6.

REPORT OF THE SUPERINTENDENT OF WATERTON LAKES PARK.

DEVELOPMENT WORK.

I am pleased to report the completion of a new bridge over the Waterton river and one over the Crooked creek. The Waterton River bridge will enable people living in the different towns in southern Alberta to visit the park; hitherto they have had to ford the river, which was always considered dangerous, and deterred many; in fact I look forward to a large increase in the number of visitors to the park this coming season, owing to the construction of this bridge. From the bridge a graded road connecting with the old road was also constructed.

Other improvements included the widening of the cut leading to the Cameron falls, and gravelling the boulevard, which extends around the bay near the Narrows, making this one of the most beautiful driveways available.

As the superintendent is at present living in temporary quarters, I hope the department will undertake the erection of suitable buildings, during the coming year.

FIRE AND GAME PROTECTION.

The big game is increasing very rapidly in these mountains, especially a herd of elk which are to be seen almost any time near Turret mountain. This herd has increased greatly, and is now estimated at about 200 head. Deer, sheep, and goats are becoming very plentiful and tame. The bears are increasing very rapidly, and last fall caused considerable trouble among the nearby settlers, by killing some of their cattle.

There was only one infringement of the park regulations, and a conviction was secured. No fires were reported.

TOWNSITES.

A great number of inquiries for lots along the boulevard have been received, especially from people in Lethbridge and Macleod; I expect to see quite a number of cottages erected during the coming year.

FISHING.

No better sport for the angler can be obtained anywhere in the Rockies than in the creeks throughout this park.

In the northern part of the south branch of the Castle river (formally the South-fork), the Beaver, Whitney, Gladstone, and Drywood creeks are abounding with trout, while the Waterton river and the Belly river in the south end of the park yield large catches daily.

The Waterton lakes, three picturesque bodies of water some 16 miles in length, the Cameron, Bertha, and Beaver, three smaller lakes of from 1½ to 3 miles in length are well stocked with trout, and afford no end of sport to the fisherman.

GRAZING AND TIMBER.

Settlers adjoining the park have taken advantage of the grazing privileges which are obtained here, by grazing their stock under permit, which was reduced this year from $1 per head per year, to 7 cents per head per month.

TOURISTS.

As it is situated a considerable distance from the railroad, the tourists coming to this park travel usually by motor or vehicle, and as last summer was very rainy and the roads in poor condition, the number of visitors was not as great as it might have been. Notwithstanding this, the attendance was very good, showing this park to be gaining in popularity as one of the most desirable pleasure resorts for fishing, boating, scenery, etc., to be met with anywhere.

Another new motor-boat, which carries 75 passengers, was launched the latter end of the season.

Waterton Lakes park was visited by several different parties from the United States Glacier National park during the past summer, who were delighted with the scenic features to be found in this park.

The number of tourists visiting the park this season was approximately 2,500.

ROBERT COOPER.

APPENDIX No. 7.

ANNUAL REPORT FOR JASPER PARK.

TRAILS.

The war still going on, and consequently economy having to be practised, the development work of the park has been somewhat handicapped; the only important work undertaken this season has been the making of new roads and trails where absolutely necessary, and the repairing of the old ones.

The Medicine Lake to Maligne trail was commenced in the month of June and work was carried on until September 18, when it was deemed advisable to close down for the season. This trail, or a portion of it, will, at a later date, be incorporated into the proposed main motor road from Jasper to Lake Louise.

Repairs to the following trails were made: Pyramid Lake was widened out in places and general repairs made. A new diversion was built crossing the Grand Trunk Pacific railway at the Cottonwood creek to give access to the cemetery and the old tote road to Swift-Holm.

The mileage of trails now in the park is approximately 143, of which about 30 miles have been completed this season. There are many old trails and tote roads which together amount to over three hundred miles.

FIRE PROTECTION.

There are now nine fire and game wardens and two temporary ones. These men have been assigned certain districts to patrol, and among their varied duties they must report any fire to headquarters and extinguish it with any help available. They are engaged in building trails when not otherwise employed.

A new forest telephone system has been constructed which will enable wardens at outlying points to report a fire without loss of time. There are now about 80 miles of telephone lines completed, consisting of 17 miles from Yellowhead to Jasper, 38 miles from Jasper to Errington (Mile 70 C.N.R.), 25 miles under construction from Jasper to Medicine lake and connected by 4 miles to top of Fitzhugh mountain, and three-quarters of a mile from Pocahontas to Jasper Park collieries.

There was only one fire of any importance reported during the fire season; this took place in August, 1915, near Jack lake. It was quickly got under control and little damage was done.

GAME AND FISH.

Game is fairly plentiful; moose and deer abound in some districts, especially the latter. There are also mountain sheep and goats and a few bears. Amongst the smaller animals are cougar, lynx, coyotes, fox, beaver, marten, mink, weasels, porcupine and rabbits.

Birds are not as plentiful as one would wish. There is a scarcity of grouse and prairie chicken; ptarmigan are numerous on the higher ranges. Hawks and eagles are to be found, and owls, everywhere. Wild geese and ducks abound around the Rock Lake district.

VISITORS.

The Grand Trunk Railway Company advertised the park considerably this last summer and as at present there is no hotel at Jasper, a summer camp called "The Tented City" was opened on the borders of lake Beau Vert, under the management of Mr. Kenneth of the Edmonton Tent and Mattress Company. It proved a success, and over two hundred and sixty visitors registered at this camp alone, and availed themselves of this accommodation to explore Jasper park and vicinity. It is proposed to organize a similar camp on a larger scale this summer.

A number of improvements, such as waterworks, sewage, and a lighting system, are very desirable, but owing to the war it is impossible to enter upon these works as the strictest economy has to be practised to make the appropriation cover the season's work.

P. C. BARNARD-HERVEY.

APPENDIX No. 8.

REPORT OF THE SUPERINTENDENT OF REVELSTOKE PARK.

My report for the year ending March 31, 1915, contained a description of the chief scenic attractions of Revelstoke park and surrounding country as well as a review of the progress of the work on the construction of the automobile road. It was found on examining this road early in the spring, that the water from the melting snow had done considerable damage to the roadbed, making it unfit in places for motor traffic. Several small rock and mud slides occurred, which had diverted the water from the side ditches and caused it to run along the road-bed. A few men were taken up to effect emergency repairs sufficient to permit traffic. Later a regular crew of three sectionmen were outfitted and placed on work to effect repairs, clear out side ditches and culverts on the portion of the road from station 225 to its junction with the Columbia River road. These sectionmen remained on this work until they had covered this whole distance of approximately 6 miles. When these repairs were completed we were complimented on many occasions on the excellent condition of the drive.

With the opening day of June, our force of men and teams was assembled, the construction tools, tents, boarding outfit, etc., loaded in wagons and despatched to the camp grounds, some 6 or 7 miles from Revelstoke. On the portion of the road which had been constructed during 1914 large quantities of earth and loose rocks had fallen into the side ditches, blocking them up. The road was badly washed out as a consequence, and our first work consisted in getting the water channels clear as soon as possible between station 225 and station 304. Whatever suitable surfacing material was found while clearing the ditches was placed on the road-bed, and the coarse boulders raked off the side of the road.

A survey party, under Mr. J. M. Wardle, spent considerable time locating and making measurements of materials to be removed in construction work for the season. These measurements greatly aided in the preparing of the weekly progress reports covering the work. Locating and cross-sectioning has now been completed to a considerable distance beyond where the work has been opened up this season. A copy of the profile plan of the automobile road has been received at this office and is found to be of great value for reference. During the year 1914 the road from station 200 to station 304 was made passable for automobile traffic but was not fully completed, so that the work

during the first three weeks of June consisted in completing this portion for automobile traffic. After this time, new road was opened up as quickly as possible until by the last of August we had a completed road to station 430. Having been instructed regarding the establishing of an internment camp in Revelstoke park, the construction force was reduced to about one-third its original number. Those retained were principally axemen, who were placed to work cutting right of way from station 430 onward. One week was spent at this work, and this force had cut through to station 542, a distance of approximately 2½ miles.

SUMMARY.

Summary of work on road repairs and new road construction by hired labour for the season is as follows:—

	Miles.
Road repaired and raked, side ditches cleaned out by sectionmen approximately	4·26
Road repaired and raked, side ditches and culverts cleared, with new surfacing on the greater part by road crew	1·5
New road opened up for automobile traffic, surfaced, side ditched and raked	2·39
Earth removed by day labour on road..cubic yards.	1,124·4
Loose rock removed by day labour on road.. "	4,848·5
Solid rock.. "	1,435·6
Round cedar cut and used on culverts, bridges and crib work..lineal feet.	18,245
Gravel hauled for surfacing..cubic yards.	484
Right-of-way cut out..miles.	2·51

TRAILS.

The pony trail from Revelstoke to the summit was found to be in very bad condition even after the warden had put in considerable time making light repairs, so a small party of five men were placed at work under the warden, to give this trail a good overhauling. We were fortunate in securing some first-class men for this sort of work, and the progress made at cutting brush, renewing bridges, culverts, and corduroy, was most satisfactory. In a number of places diversions were made to escape the worst mud holes which occur so frequently. At the lower end of this trail, it was considered much cheaper to build a new portion to connect with the wagon road to the Ski-jump road, than to repair the existing trail. An easy grade was obtained and a much better and easier trail will be found on this new portion. In making my report for the chief forester for the year 1916-17, estimates were submitted for the opening up of new trails in this park, to facilitate the reaching of the outlying portions in case of forest fires. Under present conditions there are no trails, which we could use to transport necessary supplies to fire fighters, on the eastern or northern reaches of this park. These trails could be built quite cheaply and would be of great value in case of fire. It is also advised that a cabin be constructed somewhere in the Silver Creek valley, as a stopping place for a warden when in that vicinity. This matter is also mentioned in my report.

FISH AND GAME.

A great many times during the past summer and fall, persons have remarked how numerous the game birds were becoming within the park. This is partly due to the strict watch kept by the warden for poachers and for dogs running at large. An article published in the local press, under a headline declaring that "it was not

unlawful to hunt game in Revelstoke park," almost rendered unavailing all the good work accomplished in this line. This article was replied to in the next issue of the press, by citing several clauses of the park regulations, among which was the clause which states "it is unlawful for any person to have or carry unsealed firearms in any National park." This had the desired effect and most certainly stopped many from entering the park with the intention of killing game.

The appointment of another warden to look after the Silver Creek district, is in my opinion very important, because there are many hunters who go there each fall to hunt caribou, deer, and bear, and if these animals are not protected, it will only be a short time until they will be exterminated in Revelstoke park. The present warden cannot effectively patrol that portion of the park because there is no trail there at present, and it is some miles distant from Revelstoke.

The matter of stocking two lakes on the summit with game fish has been brought to my attention, and I understand a fisheries man visited the lakes and reported favourably on the matter. If this can be accomplished successfully, it will add materially to the attractions of Revelstoke park.

WINTER SPORTS.

Since furnishing my annual report for 1914-15, the possibilities of Revelstoke park being developed as a centre for all kinds of winter sports has been strongly impressed on the writer, first, on account of the success realized from these sports last season, and secondly on account of the further success anticipated owing to the construction of a new ski jump, which is the peer, if not the superior, of any in the world.

Heretofore, mount Revelstoke, its beautiful Alpine park, its unique and wonderful auto road, have been described, praised, and admired from the summer standpoint only. But now, and with suddenness, a new argument—a new meaning—rich with reason and promise of reward, has been presented for the prosecution and development of the plans to exploit this truly magnificent "Garden of the Gods." It came about by the formation, in Revelstoke, in mid-December, of the Revelstoke Ski Club. Starting then with but twenty-two members it now has over one hundred. On February 9, 1915, the club held its first tournament on the slopes of mount Revelstoke, and about two thousand people from various points of British Columbia and Alberta witnesssed the thrilling leaps and runs of contestants. One of the most interested spectators there was Mr. Grant Hall, vice-president of the Canadian Pacific Railway. So interested was he that he took away—by request—the moving picture films arranged for by the local Board of Trade, to develop at his own expense, and promised that, should they turn out well, he would have them placed with the company's exhibit at the Panama exhibition where views of Revelstoke's Alpine park will also be shown. The new viewpoint had caught him also. He, too, had visions of a winter playground —equal to anything in Switzerland—and the slogan "See your own country first," is the present watchword of the railways throughout Canada and the United States.

Another interested visitor, and from another angle entirely, was Mr. Thorlief Iverson, President of the Western Canada Ski Association, who kindly attended to act as judge of sports. So much impressed was he with the natural situation and advantages of Revelstoke park for the cultivation of winter sports, that he remained another day to explore mount Revelstoke. He found and located a jumping site which in his opinion equals the famous Blumendal hill in Norway for exposure, angle incline, approach and speed finish; and he stated before the Board of Trade, that in his opinion, with expert jumpers, a world's record should be made on it. He made an eloquent plea for the development of the hill, the progress of the sport, the business value of the cultivation of the natural advantages and scenic beauties so prodigally present

in the mountains both winter and summer; and he left, too, with a promise to do all he could to advertise the attractions—especially the winter ones—of the place.

This new value of the Alpine park, and the necessity of developing and making it accessible for a winter as well as a summer playground for this continent has taken hold, and a new and most popular and cogent reason now exists for prosecuting the plans of the Government with regard to the automobile road and the park generally. Already inquiries have come in from as far as Montreal, asking if the opportunity exists for ski-ing tours; and representatives of the sport in several places have expressed their intention of coming to Revelstoke for its enjoyment and competition next winter.

Another possibility, one equally unique and exciting with the possibility of golfing above the clouds, is presented or afforded by mount Revelstoke. At such an elevation where there are but two seasons—winter and summer—snow country is good for sports until the end of May. In Switzerland, at altitudes of over 3,000 feet, April is an excellent ski-ing month. On mount Revelstoke, where there is no danger of avalanches at the elevation of 6,000 feet, ski-ing, tobogganning, bob-sledding and snow-shoeing can be had till the end of May; in fact, contests between local parties actually took place on mount Revelstoke May 24, 1915, at which a jump of 104 feet is recorded as having been made from a natural jump. What an attraction to the winter sportsmen of a continent! And then, a month later, fields of flowers, emerald lakes, and golfing above the clouds.

The more one studies at first hand, with experience and trustworthy evidence to guide one, the more enthusiastic one becomes over the attractive possibilities of mount Revelstoke and its park. The joy and exhilaration of the automobile drive, the charm and variety of the scenic views; the lovely contrasts of the park tarns and lakes; balsam trees and flower masses of vivid colouring; open meadow plateaus and rock ridges and glacier fronts; snowpeaks and green forests; and the great pine stretches and slopes of winter's snow, filled with the tonic of life in all seasons; no wonder the trapper and the prospector, the summer and winter genii of the mountain summits, call it "God's country."

F. E. MAUNDER.

REPORT OF ST. LAWRENCE ISLANDS PARKS.

The St. Lawrence Islands parks, consisting of twelve islands and a small portion of the mainland situated on the St. Lawrence river, between Brockville and a few miles west of Gananoque, are chiefly used by day visitors and campers.

These islands are marked by large sign-boards on which is written: Dominion Public Lands, with the respective number of the island, so that they may be more readily distinguished by the public.

All the large and suitable islands comprising the Thousand islands in the St. Lawrence river, except those reserved by the Government for park purposes, have been taken up by private individuals, and are therefore not open to the public. The Dominion Park islands, on the contrary, are set apart for the free use of the people, and many of them are equipped with all the necessary accessories for picnic parties, campers,

or day visitors. This equipment consists of wharves for skiffs and launches, pavilions, camp-stoves, tables, benches, etc. These island parks are becoming more popular every year, as they afford the general public the opportunity to enjoy a pleasant rest, together with the beautiful scenery of the St. Lawrence islands.

The work undertaken in connection with these islands during the past year, with the exception of Gordon island, consisted chiefly in small repairs to the equipment. All this was done by the caretakers.

The wharf on Gordon island was seriously damaged by ice, and it was therefore necessary to rebuild a portion of it and to put a new cover on the balance. Considerable repairs were also made to the pavilion on this island, and a new flag-pole erected.

A list showing the names of the islands, their size, location, and the improvements on each, together with the names of the different caretakers follows:—

Aubrey island.—Dominion Public Lands No. 9; approximate area, 15 acres; 2½ miles west of Gananoque; improvements—1 launch wharf, 1 pavilion, 2 stoves, 2 out-closets, 4 tables, 2 garbage cans, 8 benches (marine light); caretaker, J. A. Acton, Gananoque.

Mermaid island.—Close to Aubrey; area, 4 acres; caretaker, J. A. Acton.

Beau Rivage.—Dominion Lands No. 1; approximate area, 10 to 14 acres; 2 miles west of Gananoque; improvements—steamboat and skiff wharves, 1 pavilion, 4 stoves, 2 out-closets, 4 tables, 14 benches, 2 garbage cans; caretaker, A. E. Meggs, Gananoque.

Gordon island.—Dominion Public Lands, No. 2; 16 to 20 acres area; 2 miles south-east of Gananoque; improvements—steamboat wharf and skiff wharf, 1 pavilion, 3 stoves, 2 out-closets, 4 tables, 10 benches, 2 garbage cans; caretaker, Thomas Glover, Gananoque.

Camelot island.—Area, 25 acres; 3 miles east of Gananoque; 1 stove; caretaker, Thomas Glover.

Endymion island.—Ten acres area; 3 miles southeast of Gananoque; 1 stove; caretaker, Thomas Glover.

Georgina island.—Dominion Public Lands No. 3; area, 25 acres; location, 9½ miles east of Gananoque; improvements, on west end,—steamboat and skiff wharves, 1 pavilion, 2 stoves, 2 out-closets, 4 tables, 12 benches, 2 garbage cans; on east end, skiff wharf, 3 stoves, 2 closets, 4 tables, 14 benches, 2 garbage cans; caretaker, J. C. Wallace, Ivy Lea.

Constance island.—Close to Georgina; area, 7 acres; 1 stove; caretaker, J. C. Wallace.

Grenadier island.—Dominion Public Lands No. 5; area, 5·1 acres; location near Rockport; improvements, west end of island—steamboat wharf, 1 pavilion, 2 stoves, 2 closets, 4 tables, 12 benches, 2 garbage cans; caretaker, Delbert Root, Rockport.

Mallorytown Landing.—Dominion Public Lands No. 6; part of mainland, 12 miles west of Brockville; improvements—1 pavilion, 1 stove, 2 closets, 2 tables, 7 benches, 1 garbage can; caretaker, R. J. Haffie.

Adelaide Island.—Mile and a half south of Mallorytown Landing; caretaker, R. J. Haffie, Mallorytown.

Stovin Island.—Dominion Public Lands No. 7; area, 5 acres; 2½ miles west of Brockville; improvements—steamboat and skiff wharves, 2 pavilions, 4 closets, 6 tables, 16 benches, 6 garbage cans, 5 stoves; caretakers, J. E. Timleck, Brockville.

METEOROLOGICAL TABLES.

MAXIMUM and Minimum Temperatures and the General State of the Weather between April 1, 1915, and March 31, 1916, at Banff, Alta.

Date.	Thermometer Readings		Weather, etc.
	Maximum for day.	Minimum for day.	
1915			
April 1	51·3	29·1	Cloudy; gale, S.W.
" 2	58·5	39·8	Fair; strong warm wind, S.W.; light rain.
" 3	54·8	39·5	Fair; strong wind, S.W.; snow gone.
" 4	53·0	31·2	Fair.
" 5	54·2	24·4	Fair; very fine day.
" 6	53·0	22·2	Fair; very fine day.
" 7	54·0	24·2	Fair; rain.
" 8	42·3	31·7	Fair; light snow.
" 9	47·2	32·2	Cloudy; gale, S.W.
" 10	56·3	24·3	Fair; very fine warm-like day.
" 11	60·2	29·3	Fair; very fine day.
" 12	59·9	30·3	Fair; very fine day.
" 13	51·9	30·2	Cloudy; roads in splendid shape.
" 14	59·2	28·3	Fair; perfect day.
" 15	66·1	25·7	Fair; perfect day.
" 16	69·3	28·0	Fair; perfect day.
" 17	68·3	30·2	Fair; very fine day.
" 18	67·8	34·5	Fair; strong S.W. wind afternoon; very fine day.
" 19	61·3	29·5	Fair.
" 20	60·3	36·2	Cloudy; strong wind; rain; snowstorm.
" 21	40·2	30·3	Cloudy; chilly day; snow gone and roads dry again, afternoon.
" 22	53·1	18·9	Fair; very fine day, but cool.
" 23	61·1	21·0	Fair; very fine day.
" 24	55·3	39·0	Cloudy; light rain.
" 25	60·3	32·3	Fair; light rainshower.
" 26	60·2	39·2	Cloudy; gale, W., part of afternoon.
" 27	54·0	32·9	Cloudy; gale, S.W.; chilly.
" 28	66·3	32·0	Fair; very fine day.
" 29	68·2	29·8	Cloudy; rain and thro. midt., thunderstorm.
" 30	41·5	35·8	Overcast; rain and thro. midt.; fresh snow on high mountains.
May 1	42·6	34·4	Cloudy; rain.
" 2	51·0	35·0	Cloudy; rain.
" 3	55·1	28·2	Fair.
" 4	46·3	37·4	Overcast; rain.
" 5	55·3	38·7	Cloudy; rain.
" 6	63·6	30·3	Fair; rain; thunderstorm at night.
" 7	69·2	36·8	Fair; very fine day.
" 8	70·3	39·8	Fair; very fine day.
" 9	69·2	31·9	Fair; light rain at night; very fine day.
" 10	57·8	45·0	Fair; light showers off and on early a.m.
" 11	58·4	40·2	Fair; cool.
" 12	63·0	29·2	Fair.
" 13	44·3	39·2	Overcast; heavy rain.
" 14	42·7	34·0	Overcast; rain; snow, evening.
" 15	40·2	32·1	Overcast; rain; light snow early a.m.
" 16	45·8	31·8	Cloudy; light rain.
" 17	45·2	34·5	Overcast.
" 18	45·9	37·0	Cloudy; rain.
" 19	48·5	33·6	Cloudy.
" 20	56·9	34·2	Cloudy; trace of rain.
" 21	61·0	34·3	Cloudy.
" 22	53·9	40·7	Cloudy; light rain.
" 23	58·3	33·2	Cloudy; rain.
" 24	53·7	38·0	Cloudy; rain; chilly.
" 25	58·8	37·7	Cloudy; rain.
" 26	57·8	38·1	Cloudy; rain.
" 27	65·3	45·5	Fair; windy.
" 28	64·5	51·0	Fair; rain early a.m.
" 29	61·8	38·9	Fair; rain.
" 30	59·8	31·0	Fair.
" 31	64·5	37·0	Cloudy.

METEOROLOGICAL TABLES—*Continued.*

MAXIMUM and Minimum Temperature and the General State of the Weather, etc—*Con.*

Date.	THERMOMETER READINGS		Weather, etc.
	Maximum for day.	Minimum for day.	
1915			
June 1.....	60·2	40·2	Cloudy; rain.
" 2.....	51·5	42·2	Cloudy; rain; raw day.
" 3.....	61·0	43·0	Cloudy.
" 4.....	69·1	33·1	Fair; rain.
" 5.....	55·5	38·9	Cloudy; rain.
" 6.....	59·0	32·0	Cloudy; rain early a.m.
" 7.....	55·5	39·0	Cloudy; rain.
" 8.....	58·5	36·0	Cloudy; rain.
" 9.....	53·2	32·5	Cloudy; rain at night.
" 10.....	55·0	38·0	Fair; rain and hail.
" 11.....	57·5	35·9	Cloudy; light rain.
" 12.....	62·7	30·9	Fair; rain and hailstorm.
" 13.....	61·0	35·7	Cloudy; rain.
" 14.....	63·9	33·4	Fair; exceptionally heavy rain early a.m. with snow.
" 15.....	53·4	43·7	Cloudy; rain.
" 16.....	63·8	41·5	Cloudy; rain.
" 17.....	51·0	38·9	Cloudy; exceptionally heavy rain early a.m.
" 18.....	56·3	37·9	Cloudy; rain.
" 19.....	52·4	39·3	Overcast; rain.
" 20.....	58·3	39·8	Cloudy; rain.
" 21.....	66·0	39·0	Fair.
" 22.....	74·2	35·8	Fair.
" 23.....	75·2	38·2	Fair; very fine.
" 24.....	75·6	40·4	Fair; very fine; thunder and lightning, no rain.
" 25.....	54·3	48·0	Cloudy; rain; thunderstorm; very heavy downpour during night.
" 26.....	42·2	35·0	Overcast; very heavy rain; thunder storm; Bow river very high and very muddy, and Spray river very high and very clayey; trains blocked east ane west.
" 27.....	64·8	37·3	Fair; rain early a.m.
" 28.....	66·1	35·8	Fair.
" 29.....	72·0	37·0	Fair; very fine.
" 30.....	73·0	44·6	Fair; very fine; rain during night.
July 1.....	58·8	43·4	Cloudy; rain.
" 2.....	62·0	35·3	Fair; rain.
" 3.....	68·2	41·7	Fair; very fine.
" 4.....	74·3	41·3	Fair; very fine; thunderstorm.
" 5.....	73·2	42·7	Fair; very heavy rain; thunderstorm hail.
" 6.....	71·1	43·2	Fair; rain; thunderstorm.
" 7.....	68·7	48·9	Cloudy; rain.
" 8.....	67·3	46·2	Fair.
" 9.....	63·3	39·7	Cloudy; rain; thunderstorm.
" 10.....	57·0	40·8	Cloudy; rain; gale S.W.
" 11.....	55·3	40·2	Cloudy.
" 12.....	66·9	42·2	Cloudy; rain; thunder.
" 13.....	53·5	44·5	Cloudy; rain; very heavy rain during night.
" 14.....	49·2	36·2	Cloudy; heavy rain; chilly day.
" 15.....	56·3	39·3	Cloudy; rain.
" 16.....	61·0	43·6	Cloudy; rain.
" 17.....	56·5	41·7	Cloudy; rain.
" 18.....	66·1	44·0	Fair; rain.
" 19.....	72·9	39·2	Fair; rain.
" 20.....	75·0	40·5	Fair; very fine.
" 21.....	76·2	43·0	Fair; rain; thunderstorm.
" 22.....	79·2	45·0	Fair; very fine.
" 23.....	72·0	44·0	Fair.
" 24.....	69·2	43·0	Cloudy; thunderstorm to midnight.
" 25.....	68·5	46·0	Cloudy; thunder.
" 26.....	61·4	41·0	Cloudy; rain.
" 27.....	60·0	44·7	Cloudy; rain.
" 28.....	59·0	49·2	Cloudy; rain.
" 29.....	66·2	49·0	Cloudy; rain; very fine afternoon.
" 30.....	75·3	49·8	Fair; light rain; thunderstorm and threatening looking.
" 31.....	66·1	45·6	Cloudy; rain.

METEOROLOGICAL TABLES—*Continued.*

MAXIMUM and Minimum Temperature and the General State of the Weather, etc—*Con.*

Date.	THERMOMETER READINGS		Weather, etc.
	Maximum for day.	Minimum for day.	
1915			
Aug. 1	76·2	45·0	Fair; very fine day; Zodaical light.
" 2	77·8	46·7	Fair; very fine day.
" 3	73·6	46·5	Cloudy; rain.
" 4	73·8	41·0	Fair; very fine day.
" 5	78·2	38·5	Fair; perfect day.
" 6	83·7	40·1	Fair; perfect day.
" 7	81·3	45·3	Fair; very fine day; thunderstorm during night.
" 8	76·7	44·8	Fair; very fine.
" 9	81·2	42·0	Fair; very fine; vivid lightning moving under aurora.
" 10	81·9	42·0	Fair; perfect day.
" 11	84·3	40·6	Fair; perfect day.
" 12	75·4	48·8	Fair; rain; thunderstorm; very fine day.
" 13	78·0	43·8	Fair; very fine day.
" 14	81·0	43·9	Fair; rain during night; thunderstorm, very fine day.
" 15	79·1	49·9	Fair; thunder.
" 16	78·3	40·2	Fair; very fine day; large solar halo.
" 17	72·2	43·8	Fair; rain; gale S.W.; thunderstorm.
" 18	69·1	44·8	Fair; rain; thunderstorm.
" 19	60·3	45·1	Overcast; rain; cool.
" 20	59·7	50·1	Cloudy.
" 21	77·2	43·0	Fair; perfect day.
" 22	70·3	45·2	Fair; thunderstorm, hail; smoke from British Columbia forest fires.
" 23	78·6	40·8	Fair; perfect day.
" 24	72·7	41·3	Fair; very fine; rather smoky; thunder and lightning.
" 25	78·8	47·2	Fair; very fine.
" 26	78·8	40·9	Fair; light rain; very fine; meteor detonates 11 p.m., loud report.
" 27	76·1	46·0	Fair; very fine day and night.
" 28	81·3	41·3	Fair; perfect day.
" 29	84·0	39·4	Fair; perfect day.
" 30	81·0	39·2	Fair; very fine morning; rain.
" 31	64·0	47·8	Cloudy.
Sept. 1	64·0	39·3	Fair; rain, and heavy through midnight.
" 2	61·2	45·2	Cloudy; rain a.m.; fine afternoon.
" 3	70·3	34·9	Fair; perfect day.
" 4	71·0	40·8	Fair; very fine.
" 5	73·0	37·9	Fair; very fine.
" 6	60·0	47·4	Cloudy; strong S.E. wind later afternoon.
" 7	58·0	38·8	Cloudy.
" 8	50·2	32·2	Cloudy; heavy rain during night.
" 9	45·2	35·9	Cloudy; light rain.
" 10	44·8	31·7	Cloudy.
" 11	48·3	26·7	Cloudy; rain changing to snow during night.
" 12	31·1	22·2	Cloudy; cold; snow on ground and slushy.
" 13	34·3	18·2	Cloudy; chilly.
" 14	48·0	32·3	Cloudy; chilly wind strong afternoon S.W.
" 15	58·1	38·8	Cloudy; light rain; strong wind afternoon, S.W.
" 16	60·1	40·2	Fair; strong S.W. wind.
" 17	62·2	41·3	Fair; strong wind S.W. afternoon.
" 18	62·1	35·8	Cloudy; rain; fall tints.
" 19	51·2	32·4	Fair; rain heavy early a.m. and snow.
" 20	56·5	27·3	Fair; very fine day.
" 21	64·0	29·8	Fair; very fine day; very large solar halo.
" 22	57·0	38·0	Fair; light rain.
" 23	42·1	34·7	Cloudy; rain.
" 24	54·1	35·8	Fair.
" 25	62·4	28·6	Fair; perfect day.
" 26	56·1	28·7	Cloudy.
" 27	51·2	43·8	Cloudy; rain thro. midt.
" 28	56·0	39·2	Fair.
" 29	62·2	29·8	Fair; very fine day.
" 30	55·8	44·0	Cloudy; rain evening and thro. midt.

METEOROLOGICAL TABLES—*Continued.*

MAXIMUM and Minimum Temperature and the General State of the Weather, etc—*Con.*

Date.	THERMOMETER READINGS		Weather, etc.
	Maximum for day.	Minimum for day.	
1915			
Oct. 1	52·1	41·8	Cloudy; trace of rain.
" 2	49·3	35·5	Cloudy; rain.
" 3	50·0	33·2	Cloudy; rain.
" 4	47·3	31·0	Fair; rain early a.m.; solar corona.
" 5	45·2	34·0	Fair; rain early a.m.; fresh snow on mountains low down.
" 6	46·1	27·0	Fair; very fine day.
" 7	46·1	20·8	Cloudy; solar halo.
" 8	58·0	29·0	Fair; strong wind S.W.; very fine day.
" 9	51·9	38·9	Fair; strong wind S.W.; very fine day.
" 10	43·3	29·2	Fair; snow early a.m.
" 11	42·2	34·8	Cloudy; strong wind afternoon.
" 12	44·3	36·4	Cloudy; rain.
" 13	48·2	36·4	Cloudy.
" 14	48·2	34·3	Fair; rain; gale early morning, S.W., very fine day.
" 15	54·0	28·3	Fair; perfect day.
" 16	59·3	29·9	Fair; strong wind afternoon; very fine day.
" 17	55·1	38·4	Cloudy.
" 18	49·3	40·8	Cloudy; gale early a.m., S.W.; rain.
" 19	38·2	27·0	Cloudy; rain early a.m. and snow; strong S.W. wind.
" 20	50·0	33·0	Cloudy; light snow early a.m., strong S.W. wind.
" 21	52·3	36·8	Cloudy.
" 22	56·8	37·8	Cloudy; large solar halo and corona; very fine day.
" 23	58·4	25·2	Fair; rain; very fine to about 4 p.m.
" 24	41·1	30·2	Fair.
" 25	47·0	31·6	Fair.
" 26	48·8	39·0	Cloudy; rain at night; strong S.W. wind.
" 27	46·1	35·3	Cloudy; rain early a.m.; gale S.W.
" 28	47·5	40·1	Cloudy; rain early a.m.; gale S.W.
" 29	47·0	39·8	Cloudy.
" 30	36·4	32·5	Cloudy; rain early a.m. and light snow early a.m.; strong S.W. wind.
" 31	41·4	29·9	Cloudy; rain snow.
Nov. 1	38·7	31·0	Fair;
" 2	31·1	21·3	Cloudy; light snow.
" 3	41·8	27·7	Fair; very fine day.
" 4	40·3	28·1	Cloudy; light rain thro. midt.; strong S.W. wind.
" 5	37·7	32·4	Fair.
" 6	31·3	11·3	Fair; very fine day.
" 7	29·3	7·9	Fair.
" 8	27·2	8·0	Fair; snow thro. midt.
" 9	21·3	17·5	Overcast; snow.
" 10	24·2	4·9	Fair.
" 11	23·8	4·3	Fair.
" 12	20·3	− 5·2	Fair.
" 13	25·1	4·1	Fair; strong S.W. wind.
" 14	29·2	18·3	Cloudy; strong S.W. wind.
" 15	30·9	16·5	Cloudy; very light snow fall.
" 16	31·8	19·0	Fair.
" 17	34·8	25·9	Cloudy; snow.
" 18	32·0	26·9	Cloudy; a few sleighs out.
" 19	30·7	24·3	Fair; light snow early a.m.
" 20	27·9	15·4	Fair; very fine day; ice on Bow river about four inches.
" 21	23·1	4·8	Cloudy; light snow; gale S.W. wind, cold.
" 22	32·0	21·0	Cloudy.
" 23	34·3	24·5	Cloudy.
" 24	28·4	13·7	Fair; light snow early a.m.
" 25	30·3	19·2	Cloudy.
" 26	33·2	26·6	Fair; strong wind S.W.; wind chilly.
" 27	25·0	12·3	Fair, cold wind.
" 28	16·1	− 7·9	Fair; gale thro. midt.
" 29	27·9	13·3	Fair; strong S.W. wind; snowflurries.
" 30	26·3	12·7	Fair; very fine day; ice on Bow river about 7 inches.

METEOROLOGICAL TABLES—*Continued.*

MAXIMUM and Minimum Temperature and the General State of the Weather, etc—*Con.*

Date.	Thermometer Readings		Weather, etc.
	Maximum for day.	Minimum for day.	
1915			
Dec. 1.....	21·0	6·0	Fair; strong gale.
" 2.....	29·7	10·1	Fair; fresh gale.
" 3.....	29·3	15·9	Fair; very fine day.
" 4.....	41·5	27·3	Cloudy; rain; ice on Bow river about 8 inches.
" 5.....	33·0	25·3	Cloudy.
" 6.....	34·8	26·5	Fair; light snow.
" 7.....	28·2	21·3	Cloudy; snow thro. midt.
" 8.....	34·9	22·6	Overcast; rain and snow; sleighing.
" 9.....	27·1	19·3	Cloudy; snow.
" 10.....	12·2	− 7·3	Fair; solar halo; sleighing now good.
" 11.....	21·8	9·9	Cloudy.
" 12.....	22·1	13·7	Fair; very fine day.
" 13.....	22·1	− 0·5	Cloudy.
" 14.....	18·3	5·6	Fair; very fine day.
" 15.....	19·2	0·2	Cloudy.
" 16.....	21·9	− 2·1	Cloudy.
" 17.....	23·3	7·3	Fair; very fine day; ice on Bow river 12 inches; Lake Minnewanka frozen over.
" 18.....	23·0	11·9	Fair; very fine.
" 19.....	22·0	14·4	Fair.
" 20.....	31·0	14·7	Cloudy; strong west wind.
" 21.....	31·5	26·0	Cloudy; snow.
" 22.....	29·0	16·2	Cloudy; snow early a.m.
" 23.....	23·2	9·2	Fair.
" 24.....	24·8	8·9	Overcast; moderate gale, S.W.; light snow.
" 25.....	21·3	15·2	Cloudy; calm; mild; Bow river ice about 13 inches.
" 26.....	18·0	− 9·3	Fair.
" 27.....	24·2	1·2	Cloudy; very light snow; strong gale S.W.; snow drifting.
" 28.....	22·0	10·8	Cloudy; moderate gale S.W.; snow drifting.
" 29.....	8·8	− 7·8	Fair.
" 30.....	9·8	−19·2	Cloudy; strong S.W. wind.
" 31.....	8·2	− 2·2	Fair; ice on Bow river about 15 inches; about 8 inches snow on ground.
1916.			
Jan. 1.....	9·2	− 8·8	Fair.
" 2.....	7·4	−17·5	Fair.
" 3.....	0·6	−22·3	Cloudy; snow.
" 4.....	− 4·0	−25·7	Fair.
" 5.....	6·3	−22·6	Fair; strong W. wind.
" 6.....	12·8	1·8	Cloudy; strong W. wind.
" 7.....	11·3	− 9·0	Fair; light snow.
" 8.....	9·9	− 3·3	Cloudy; snow during night. Bow river ice about 18 inches.
" 9.....	− 8·9	−15·5	Cloudy; snow; moderate gale N.E. snow drifting.
" 10.....	−22·8	−30·6	Fair; strong N.E. wind; snow drifting.
" 11.....	−10·0	−45·7	Fair; calm; excessively cold.
" 12.....	−17·7	−38·9	Fair; Bow river ice as cut 24 inches.
" 13.....	−14·1	−35·6	Fair.
" 14.....	−11·0	−37·0	Fair.
" 15.....	−14·7	−41·0	Fair; Bow river ice 30 inches.
" 16.....	13·2	−29·0	Cloudy.
" 17.....	11·8	−15·0	Fair.
" 18.....	17·8	−13·1	Fair.
" 19.....	19·1	− 6·1	Fair; strong S.W. wind.
" 20.....	18·6	5·5	Cloudy; snow.
" 21.....	−13·7	−18·5	Overcast; snow thro. midt.; wind to N.E.
" 22.....	− 7·0	−23·4	Overcast; heavy snowfall; ice on Bow river 31 inches.
" 23.....	−23·5	−31·8	Overcast; heavy snowfall; strong wind N.E. blizzard; snow drifting very much; very cold; 33 inches snow on ground.
" 24.....	−18·9	−46·5	Fair; very cold but calm.
" 25.....	−19·4	−35·5	Cloudy; strong east wind; snow drifting; solar halo; very blustery and very cold.
" 26.....	−20·1	−38·6	Fair; clear sky; very cold.

METEOROLOGICAL TABLES—*Continued.*

MAXIMUM and Minimum Temperature and the General State of the Weather, etc—*Con.*

Date.	Thermometer Readings		Weather, etc.
	Maximum for day.	Minimum for day.	
1916			
Jan. 27.....	−21·3	−44·0	Fair; very misty; stormy during night.
" 28.....	−13·2	−29·5	Cloudy; stormy early a.m.; cold wind.
" 29.....	−13·0	−43·8	Fair; light snow early a.m.; wind to west again.
" 30.....	0·2	−33·4	Cloudy.
" 31.....	2·7	−27·3	Fair.
Feb. 1.....	0·2	−24·0	Fair; very fine day.
" 2.....	− 0·8	−37·0	Fair; very fine.
" 3.....	− 2·1	−34·0	Fair; very fine day; ice Bow river 36 inches.
" 4.....	1·3	−10·1	Cloudy; Bow river completely frozen over; wind N.E.
" 5.....	10·8	−25·9	Fair.
" 6.....	5·1	−23·3	Fair.
" 7.....	9·3	− 6·5	Cloudy; snow.
" 8.....	12·0	− 4·2	Fair; light snow.
" 9.....	− 4·0	−11·0	Cloudy; light snow.
" 10.....	2·9	−15·1	Cloudy; snow.
" 11.....	9·8	−15·5	Cloudy; ice as cut 38 inches Bow river.
" 12.....	32·1	− 4·0	Fair; wind S.W. chinook commences during night.
" 13.....	39·0	24·0	Fair; wind S.W., strong; chinooking; ice on Bow river 39 to 40 inches.
" 14.....	46·1	30·0	Cloudy; wind S.W., gale, chinook; snow going fast.
" 15.....	48·2	40·8	Fair; strong S.W. wind during night; snow going fast.
" 16.....	46·2	34·8	Fair; light rain early a.m.; sleighing bad; snow going fast; very sloppy walking.
" 17.....	42·8	26·0	Fair; very fine day; sloppy walking.
" 18.....	45·5	17·0	Fair; fine bright day.
" 19.....	46·3	24·3	Fair; very fine day; ice on Bow 30 inches; snow on ground about 8 inches.
" 20.....	45·6	17·7	Fair; very fine day.
" 21.....	41·3	14·7	Fair; very fine day; ice Lake Minnewanka 24 inches.
" 22.....	43·1	15·5	Fair; very slippery walking for some days past.
" 23.....	39·7	27·7	Fair.
" 24.....	39·8	25·3	Fair; Bow Falls mostly open.
" 25.....	37·1	15·3	Cloudy.
" 26.....	30·8	23·2	Cloudy; snow; ice Bow river 32 to 34 inches.
" 27.....	30·0	− 2·3	Cloudy.
" 28.....	28·0	15·9	Cloudy; light snow.
" 29.....	11·4	− 2·8	Fair; cold N.E. wind.
Mar. 1.....	6·8	−22·4	Fair; strong N.E. wind.
" 2.....	5·0	−13·2	Fair.
" 3.....	23·7	− 8·9	Cloudy; snow.
" 4.....	26·2	7·2	Fair; ice Bow river about 36 inches.
" 5.....	27·7	− 7·4	Cloudy.
" 6.....	29·0	7·3	Fair; light snow.
" 7.....	29·5	13·7	Cloudy; a gale S.W. light snow.
" 8.....	42·5	26·0	Cloudy; moderate gale S.W.; trace of rain.
" 9.....	46·3	35·1	Cloudy; strong gale S.W.; rain.
" 10.....	46·1	37·8	Cloudy; no sleighing; moderate gale S.W.; light rain.
" 11.....	47·2	36·3	Cloudy; rain; sleighing on sheltered roads.
" 12.....	37·3	22·9	Cloudy; strong N.E. wind a.m. with heavy snowfall.
" 13.....	33·1	23·6	Cloudy; snow drifting yesterday; sleighing good again.
" 14.....	30·3	− 3·9	Fair; solar halo and lunar halo.
" 15.....	40·3	13·2	Cloudy; light snow early a.m.
" 16.....	42·3	14·2	Cloudy; light snow early a.m.
" 17.....	40·0	20·8	Fair; light snow early a.m.
" 18.....	43·2	9·7	Fair; Bow river ice unsafe in places.
" 19.....	45·0	25·3	Cloudy; sleighing poor yesterday. Western robin and four mountain blue birds, males.
" 20.....	50·8	29·5	Cloudy; fine day; thawing much.
" 21.....	38·3	31·3	Fair; light snow; strong gale Sulphur Mountain top.
" 22.....	40·3	28·8	Fair; fine day; no sleighing.
" 23.....	39·2	16·2	Fair; snow.
" 24.....	37·9	13·8	Fair.

METEOROLOGICAL TABLES—*Concluded.*

MAXIMUM and Minimum Temperature and the General State of the Weather, etc—*Con.*

Date.	THERMOMETER READINGS		Weather, etc.
	Maximum for day.	Minimum for day.	
1916.			
Mar.25.....	38·0	25·5	Fair.
" 26.....	42·0	27·0	Cloudy; snowstorm evening.
" 27.....	40·3	28·2	Cloudy.
" 28.....	39·8	20·3	Cloudy; snowstorm evening.
" 29.....	39·2	14·9	Fair; very bright day.
" 30.....	43·8	20·0	Cloudy; Bow river nearly open to boat house.
" 31.....	47·9	33·3	Cloudy; light rain; snow during night, snow on ground 0 to 3 inches; main road about free of snow.

NORMAN B. SANSON,

Meteorological Observer.

PART VI

FORESTRY

REPORT OF THE DIRECTOR OF FORESTRY.

This report concerns the Forestry Branch for the year 1915-16 and the reports of the officials in charge of the outside divisions.

The conditions resulting from the war made it necessary to hold back the development of the work as far as the necessities of the case would permit. The protection of the valuable public property included in the forests cannot, however, be entirely set aside. Production from the forest is as necessary to the national prosperity as production of wealth from any other natural resource. Timber is required for the development of our own country. The needs for material for reconstruction in Europe after the war should be supplied to a large extent from Canada and correspondence from Europe indicates that that is the view taken there.

In this connection the following quotation from the report of a commission on afforestation in the United Kingdom submitted to the Imperial Government in 1909 is of interest:—

> Not only do the supplies of timber threaten to prove insufficient to meet the present demand, but it would appear also that the consumption per head of population in this and other countries shows a marked tendency to increase. So impressed are continental countries with the necessity of providing supplies, and so well satisfied are they with the social and financial results, that in most of them the tendency is to extend the wooded area. While your Commissioners are satisfied that under present conditions the forest wealth of northern Europe and North America is being exploited in such a way as to threaten the maintenance of supplies, with concurrent enhancement of price, we are not oblivious to the fact that civilized countries realizing the danger of the position are now giving increased attention to forest conservancy and to re-afforestation. In the United States and Canada, where immense destruction of timber occurs annually from forest fires, it is confidently anticipated that improved control will in future materially lessen this loss. Timber saved in this way will help to increase the supplies and to that extent will tend to diminish the gravity of the outlook. Something, too, may be hoped from the introduction of method into the re-afforestation of denuded areas, but how soon and to what extent such improvement will become effective it would be difficult to say. That the timber saved from fire and created by better methods of exploitation will have its effect on future supplies cannot be doubted; that it will in any sense overstock or even satisfy the market, your Commissioners do not believe.

The war has also affected the work of the Forestry Branch on account of the enlistment in the army of about thirty members of the staff whose names will be found in the Roll of Honour at the beginning of this report.

Lance-Corporal D. N. Trapnell, who was employed as an assistant in the Pulp and Paper Division of the Forest Products Laboratories and enlisted in 1914, was reported missing after the battle of St. Julien, and no more definite word could be obtained for a long time. Information has now been received that Mr. Trapnell after his unit had been reduced from 300 to 14 in the great fight started with his remaining companions to join the Canadians on their left. Having to leave their trench for the purpose, and while doing so, he was struck down by an enemy shell. He gave promise of being a very useful member of the staff of the Forest Products Laboratories and his loss is deeply regretted. Fortunately there have been no serious casualties among the remainder of the staff who are serving at the front.

The formal opening of the Forest Products Laboratories held on the 3rd of December, 1915, marks the final stage in the primary organization of the work of research in forest products. The interest in the establishment of the laboratories shown by the Lumberman's Association, the Pulp and Paper Association, railway and construction companies, civil engineers and chemical engineers, indicates that they will fill an important place in the development of Canadian trade and industry and that such investigations have been begun at an opportune time, and when the need for the information they should furnish is being felt.

During the past year the weather has varied very much in different districts. The districts which usually have a light precipitation, such as the dry belt in British Columbia and southern Alberta and Saskatchewan, enjoyed a regular rainfall throughout the season. On the other hand districts where the precipitation is usually heavy, such as the coast district of British Columbia and the most northern parts of Manitoba, Saskatchewan and Alberta, were exceedingly dry and the danger of fire throughout the season was very great and the loss of timber considerable. The difficult fire situation in the coast district of British Columbia was well controlled and while the fire ran through considerable areas of timber slashings and settlers' clearings it was kept out of the green timber almost entirely, which demonstrates that a well organized and well managed fire patrol, with a reasonably adequate staff of rangers, can meet a very serious fire hazard successfully. On the other hand, in the northern parts of Manitoba, Saskatchewan and Alberta, the great extent of the country and the scarcity of population make the territory which each ranger patrols almost hopelessly large, while it is nearly always impossible to get sufficient help to cope with a fire of any size. As a result the loss of timber in these northern districts was considerable, although it is impossible to get an accurate record of it. The fires were numerous, many of them could not be reached and others in more accessible places were beyond the control of the men available before they were discovered. In such conditions the work of the rangers is mainly effective on its educative side. The main sources of danger from fire in the north are travellers including Indians. Indians generally have the reputation of being careful with fire but the occurrence of many fires at a distance from the regular routes of travel and on trails followed only by the Indians would indicate that they have not yet learned to take the necessary precautions. Railway construction is a great danger and this was specially demonstrated along the line of the Hudson Bay railway. The value of the timber is not sufficiently realized and its protection is not considered seriously enough by the public in general, or even by those charged with public administration in the districts referred to.

No additions were made to the forest reserves during the year. Considerable improvement work was done on most of the reserves, thereby improving the system of protection and making accessible natural resources of the reserves not previously available.

A stock of trees for reforestation has now been provided at the forest nursery and the reforestation of denuded lands in the reserves will be taken up actively in the season of 1916, and it is expected that an increased stock of trees will be provided from year to year, so that the re-stocking of the reserves will be carried out systematically. Reforestation has been delayed for two reasons: first, the necessity for providing adequate protection from fire before any large expenditure in making plantations would be justified; and, second, the growth of stock at the nursery station. The former difficulty is now fairly well provided against, and steps are now being taken to provide a regular supply of stock for planting each year.

The question of colonization in an open prairie country, where the soil is generally good, is a simple one, but in the northern parts of Manitoba, Saskatchewan and Alberta settlement is going into a country which is largely wooded, where there are considerable areas of poor soil (rocky or sandy), of high and broken land, and of muskeg and swamp not easily drained. In a country of such a character there

must necessarily be for its best development and for the support of the largest population, a good proportion kept permanently in forest. This branch has been endeavouring to approach the problem from the point of view of its special responsibility, and has been, by special exploratory surveys, locating the lands which it is considered should be permanent forest lands. For the best results in the development of the country, however, close co-operation of the agricultural, colonization and forest interests is necessary.

The more permanent the basis on which the development of the country can be built up the better. It is only where there is a basis of permanency that industries can be built up. There are many classes of industries that depend on the forest for their raw material, and on the permanence of the forest depends the establishment and continuance of such manufactures. The speculative phase of development will have to pass and give place to a rational system which has in view the permanence of industries and the security of homes dependent thereon.

While the necessity for setting apart the lands to be used permanently for timber production is obvious, a decision is sometimes difficult to reach as to the best use which can be made of a particular tract of land under the existing conditions, and even a decision reached on the existing conditions may have to be modified later by the changes resulting from the development of the country. As the development of agriculture and forestry are closely related and in many ways interdependent it has been felt that the assistance of agricultural experts would be of great value in determining whether lands are best suited for agriculture or forestry. Co-operation in this work has already been arranged with the agricultural colleges in Manitoba and Saskatchewan, and it is hoped to arrange for similar co-operation in the other provinces.

Dr. B. E. Fernow, Dean of the Faculty of Forestry of the University of Toronto, made a visit to some of the Dominion forest reserves in order to gain information in regard to the conditions thereon, so that he could better instruct the students who are passing through the forest school into the Dominion forest service in regard to the particular problems that they meet, and so that he might give some suggestions as to the work that should be carried out on the reserves. As a result of this inspection Dr. Fernow has submitted a report containing some suggestions for the management of the reserves. The suggestions are briefly as follows:—

All the forest reserves which have now a ready market for their materials or may be expected within a short time to come into the market should be prepared for technical management at once. By technical management is meant a proper location of areas in which cutting should take place and provision for replacing the harvested crop by another, either through natural regeneration or planting, or, in other words, introducing silvicultural practice.

For this purpose it is necessary to secure the data for a working plan and to elaborate the plan. This would involve a survey of sufficient accuracy and with sufficient topographic data to base thereon a fairly permanent subdivision into working units and to permit the locating of stands of timber of varying description and age; a descriptive area table giving an insight into the character of the different stands, especially those mature or near maturity and within reach of market; and an inquiry into market conditions for the various wood materials available. With such data it would be possible to determine a permissible cut with a view to guarding the future.

The most important need in addition is the development of silvicultural knowledge which can only be obtained by experiment and careful field study by very competent men. For this purpose in each of the forest reserves the biological conditions must first be examined to come to a conclusion as to what special problems are to be solved and a series of experimental areas or plots must be laid out on which to work out the best solution.

Several special problems, as indicated below, are pointed out for investigation as samples of the work required.

The aspen poplar covers a large area in a number of the forest reserves in Manitoba and Saskatchewan, its prominence being undoubtedly due to fires which have occurred in the past. Spruce is a more valuable tree and must be re-established in competition with the aspen. The chief difficulty in the way is the removal of the aspen. Aspen is useful in many ways; for fuel, pulp, flooring and lumber, small woodenware, boxes, crates and excelsior. Industries for the use of aspen in such ways might be established. A large proportion of the larger sized aspen is diseased and "punky" which makes its profitable removal a still more difficult question, and the utilization of such diseased wood requires special study. The chief difficulty in the reproduction of spruce will come from the dense underbrush, especially hazel, which is found on many of the reserves. It is so dense that it prevents natural seeding and would choke out the young growth if planted. Experiments are needed to determine the cheapest effective method of dealing with this problem.

The desire of the forester is to secure his crop, if possible, by natural regeneration; that is, to handle the mature crop so that the seeds falling from it establish the new crop before the seed trees are all removed; this in order to avoid the outlay for planting. But there are large areas in these reserves on which no old crop of desirable species is to be found, and it becomes necessary to establish such species by planting. The problem then is to find the most suitable species and the cheapest successful manner of propagation.

To gain an insight as to what species to introduce, trial plantations on a small scale are needed.

Not only in the forestless reserves and where desirable species are lacking, but also in the well-wooded ones, planting will be found often preferable to reliance on natural regeneration.

While the apparent economy in relying on nature's ability to establish a new crop is in favour of natural regeneration, avoiding the cash outlay necessary to start the crop by artificial means, sowing or planting by hand often proves the cheaper in the end.

To use nature as a planter requires not only knowledge, judgment and skill but also fortunate weather conditions, satisfactory seed production and favourable conditions of the ground for germination and growth of the seedlings. This combination of favourable circumstances does not occur frequently. On the other hand, by growing seedlings in nurseries where they can be given the best care, and setting out plants, success can be forced and time, especially, can be saved. Hence, early attention should be given to finding out the best materials and methods of planting.

The jack pine, which is the tree generally occurring on the sand lands throughout the west, is a useful one especially for posts and railway ties. It reproduces prolifically on such lands and forms very dense young stands, the density of which interferes with the development of the trees. Experiments in thinning with this species are desirable to see how the best production can be brought about. Experiments in thinning should also be made with other species.

The muskeg areas also present a special problem as the rates of growth in them are much retarded and they are in general a subject of special interest on account of their extent.

The disposal, profitably, of the fire-killed and fallen timber over a large area of the Rocky Mountain forest reserve is a special problem that requires study.

Dr. Fernow concludes his review of the situation as follows:—

> There are then a host of problems which it takes time to solve. Their solution should be attempted at an early date. This is possible by experiment on a small scale before the necessity of solving them on a large scale arrives. But it should be realized that the answers to these inquiries by experiment come as slowly, almost, as the crop itself for which they are made. In this connection, however, I may add that, apparently, the rate of growth in the prairie reserves is unusually rapid and hence the deterrent, long-time element is less obvious.

The rapid growth of trees on the forest reserves in the prairie provinces as noted by Dr. Fernow is specially gratifying and promising. It indicates that the results that can be obtained from the forests on these reserves are fully equal to the best results in the forests of Europe.

As was pointed out in the report of last year, and as is emphasized by the report of Dr. Fernow, a scientific study of the conditions and mode of development of Canadian forests is necessary for their proper management. Special studies of this nature have been found necessary in every country where forestry has been developed. The advisory committee, organized as referred to in last year's report to consider and recommend the special studies to be undertaken, have made a report suggesting some lines of investigation that require immediate attention, but the scarcity of men resulting from the war and the necessity for economy from the same cause have made it impossible to undertake any special organization for such work.

APPROPRIATION.

The appropriation for the year was $750,000. The expenditure was divided as follows:—

Salaries at head office	$ 13,703 17
" of officials on military leave	14,444 10
Travelling expenses	1,592 66
Printing and stationery	23,174 08
Miscellaneous expenses at head office	2,147 25
Statistics	5,867 16
Forest surveys	20,022 57
Fire ranging	193,911 98
Forest reserves	347,382 92
Tree planting	49,773 12
Forest Products Laboratories	61,018 22
War appropriation	10,528 07
Total	$743,565 30

(NOTE.—The item of $10,528.07 shown under War Appropriation was drawn from the forestry appropriation and later refunded.)

The field expenditure, exclusive of tree planting on the prairie farms, is divided as follows among the provinces:—

Manitoba	$107,168 38
Saskatchewan	137,244 23
Alberta	202,626 70
British Columbia (Railway Belt)	114,278 16
Total	$561,317 47

CORRESPONDENCE.

The letters received and sent out by this branch were as follows: Number of letters received, 25,265. Mail sent out: Letters, circulars, etc, 57,761; bulletins and reports, 35,729; parcels, 224. Total, 118,979.

LIBRARY.

The library of the branch is increasing in value as an assistance to the work of the branch. Seventy-three books and 658 pamphlets have been received during the year. Sixty-three periodical publications have been received, thirty-two of these by subscription and the remainder by exchange or gratuitously. As the number of publications on file increases the necessity is more and more evident of confining the

library strictly to the literature of forestry proper and those branches of science having the most direct bearing thereon. A branch library is being arranged for the district office for British Columbia at Kamloops. Steps are also being taken to provide small libraries of a few necessary reference works in the subordinate field offices connected with the branch. The total number of photographs in the collection of the branch is approximately 8,150, an increase of some 1,550 during the past year. These are found very valuable to show the types of forest and the class of work which is being done and have been used to illustrate bulletins issued by the branch.

PUBLICATIONS.

In pursuance of the policy of the branch a printing and publications costs record has been established, by which the cost of each item will be instantly available, so that the greatest economy may be secured along with the greatest efficiency in this work. Each piece of printing, however large or small, is carefully gone over with the view on the one hand of eliminating any avoidable expense, and on the other of making the printed matter as suitable as possible for the duty it is intended to fulfil.

That side of the publicity work connected with daily and weekly newspapers and other periodicals has been fully maintained, the amount of information presented in circular form being somewhat reduced while that in the form of individual statements and articles was considerably increased. Canadian newspapers, as in the past, greatly assisted the branch in urging forest fire prevention and forest conservation upon citizens and in explaining the work done for Canadian producers by the Forest Products Laboratories of Canada.

During the year the following publications were issued:—

Bulletin No. 52.—Forest Products of Canada, 1913 (French Edition).
" No. 53.—Timber Conditions in the Smoky River Valley and Grande-Prairie Country.
" No. 54.—Forest Products of Canada, 1914. Pulpwood.
" No. 55.—Forest Products of Canada, 1914. Poles and Cross-Ties.
" No. 1.—Tree Planting on the Prairies (6th Edition).
" No. 10.—The Farmer's Plantation (2nd Edition).
Circular No. 1.—General Suggestions for the Preparation of the Soil for Tree Planting. (Reprint).
" No. 3.—Government Co-operation in Forest Tree Planting. (Reprint).
" No. 5.—Planning a Tree Plantation for a Prairie Homestead. (3rd Edition).
" No. 11.—The Relation of Forestry to the Development of the Country.

STATISTICS.

A distinct advance has been made in the work of collecting forest products statistics in the form of co-operative arrangements made with the provincial forest services. The arrangement entered into with the Quebec Forest Service has been in operation for two years and has proved highly satisfactory to both administrations. The returns received from the Forest Branch of British Columbia, unfortunately, were received too late last year to be included in the annual bulletins which were consequently compiled from reports received by the Dominion Forestry Branch. This year, however, the figures to be published for 1915 covering the province of British Columbia were all gathered by the staff of the provincial administration.

The study of the wood-using industries of Quebec has been completed and the bulletin based on the information gathered will be published some time during the coming summer. A study of the wood-using industries of British Columbia made by officers of the provincial organization is being compiled and edited at the Dominion Forestry Branch and will also be published in bulletin form.

The annual bulletin on pulpwood consumption for the calendar year 1915 which is now in the printer's hands, brings out the remarkably steady growth of pulp manufacture in Canada in the last eight years. In 1908, when forest products statistics were first gathered and published by the Forestry Branch, Canada exported in the raw state 889,409 cords of pulpwood and manufactured in her own mills only 482,777 cords. In 1915 the order was reversed, 949,714 cords being exported as compared to 1,405,836 cords made into pulp in our own pulpmills. The total cut of pulpwood was 2,355,550 cords in 1915, valued at $15,590,330, of which 59·7 per cent was used in making pulp in Canada and the remaining 40·3 per cent was exported to the United States in the unmanufactured state. It is estimated that 1,074,805 tons of air-dry pulp were made from wood in Canada in 1915.

The following is an estimate from the information available of the total value of forest products in Canada during the calendar year 1915:—

Lumber, lath and shingles	$ 69,750,000
Firewood	60,650,000
Pulpwood	15,750,000
Fence posts and rails	9,000,000
Cross-ties	3,500,000
Square timber exported	480,000
Cooperage	1,400,000
Poles	500,000
Logs exported	1,325,000
Tanning materials	170,000
Round mining timbers	680,000
Miscellaneous exports	175,000
" products	9,500,000
Total	$172,880,000

WOODLOTS.

There were a number of inquiries in regard to the care of trees and the management of woodlots received during the year and in a number of cases the properties were visited and suggestions made for the establishment or management of woodlots. There is an increasing interest shown in the possibility of obtaining value from such lands on farms as have no agricultural usefulness, and an appreciation of and desire for good forest management.

TREE PLANTING.

It is gratifying to know that the provision of larger nursery accommodation and a greater supply of trees for distribution for planting on the farms has been fully justified by the increasing demand. Although the number of trees distributed in the spring of 1916 was 4,571,475 as compared with 3,730,375 in the spring of 1915, the average number which was given to each applicant in 1916 was only 877 trees, as compared with 1,078 trees in 1915, so greatly had the number of applicants increased. The applications for 1916 were 5,210 as compared with 3,459 in 1915.

The new forest nursery at Sutherland is now in good order and stock amounting to 1,142,000 trees was available for distribution in the spring of 1916.

The first part of the season was rather dry and unfavourable to the starting of plantations, and there were several late and severe frosts. In spite of these difficulties the plantations set out made satisfactory progress with the exception of those made from cuttings which were below the average.

It is interesting to note that the Government of the United States, after a careful examination of the work done by the Tree-Planting Division of this department, has decided to adopt a similar plan for supplying trees to the farmers of the western prairie states.

It has now been possible in the nurseries to provide stock for reforestation work on the forest reserves and planting will be done on several reserves in the spring of 1916. It is expected that this work will be gradually developed and extended.

FIRES.

The character of the season varied very much in different localities. The early part was dry in southern Manitoba and the whole season was unusually dry throughout northern Manitoba, Saskatchewan and Alberta. In the coast district of British Columbia the precipitation was light during a considerable portion of the season. Throughout the other districts the rainfall was sufficiently regular to keep the fire danger well in control.

Usually the most dangerous period for fires is in the spring months after the winter snow is gone and before the new vegetation has started. When warm weather comes early, taking off the snow, and is succeeded by cold which checks the new growth the danger season is prolonged and makes control very difficult. The danger comes from the dead leaves and grass of the previous year, which are highly combustible, and from the frequent and violent winds that prevail at that period. To show the extent to which winds may affect the situation a statement is given hereunder of the number of windy days in the months of April, May and June in several districts, as shown by the records of the Meteorological Service:—

	Number of Windy Days in		
	April.	May.	June.
Edmonton	25	24	24
Calgary	20	13	18
Battleford	25	24	22
Winnipeg	23	24	24

The number of fires reported in detail during the year was 1,455, of which 1,112 were small fires, and 343 large fires covering over ten acres each. The total area burned over was 905,828 acres and the quantity of timber destroyed 223,908,000 feet board measure, and of smaller-sized trees 2,415,921 cords. These totals do not include fires along the Hudson Bay Railway line or fires in the most northern parts of Manitoba, Saskatchewan and Alberta in regard to which detailed reports were not received.

The causes of fires were as follows:—

	Number of Fires.	Percentage.
Railways	123	8·46
Saw-mills and logging	34	2·33
Brush burning (other than by settlers)	10	0·68
Settlers	246	16·90
Campers and travellers	410	28·18
Incendiary	14	0·97
Lightning	60	4·13
Other causes	30	2·07
Unknown causes	528	36·28
Total	1,455	100·00

The chief known cause of fire was "campers and travellers" which emphasizes the fact that until care with fire becomes a universal habit, which can be brought about only by persistent education on the subject, danger will come from the carelessness of those travelling through the forests. In the previous year the chief cause was the clearing of lands by settlers and perhaps the relative position of these two causes this year was owing more to the fact that the districts where settlement is developing had a regular precipitation while those farther north traversed only by travellers were unusually dry. The railways hold third place and it is probable that this will be their relative position in the future for some years to come.

As I pointed out last year, outside of British Columbia, the legal provisions for the control of fire used in clearing land are entirely inadequate. Neither the provincial fire Acts nor the Dominion lands regulations give the fire ranger any control, even in the best timbered districts, of the setting out of fire, and unless the control is preventive it never can be fully successful.

The statistics of fires as given above are not complete, as the reports from the northern districts were not sufficiently definite owing to the great extent of country and the small number of rangers. Along the Hudson Bay railway there is no information as to the number of fires but an examination of the tracts over which the fires ran gives an approximate area of one million acres. In the McMurray district on the lower Athabaska river there were over one hundred fires reported, most of which were small. One large fire burned nearly one hundred thousand acres. Along the lower Peace river, lake Athabaska, Great Slave river and Mackenzie river there were a large number of fires owing to the specially dry season but it was impossible to reach or handle most of them owing to the large extent of country, the smallness of the patrol staff and the almost entire absence of permanent population. In such conditions the work of the fire ranger is almost purely educative and he can do little beyond.

The causes of the fires in the northern districts are campers and travellers, including prospectors and even surveyors. An unfounded report of rich finds of ore at the east end of lake Athabaska took a number of prospectors into that district. The Indians are usually credited with being careful with fire, but unless the Indians are responsible for them it is hard to understand the starting of fires during the past season far from the regular routes of travel and on trails that are frequented only by Indians.

FIRES AND RAILWAYS.

The fire patrol system on the railways under the authority of the Board of Railway Commissioners for Canada is becoming more thoroughly systematized from year to year, and the railway companies are generally taking their share of the responsibility in a more satisfactory way. The inspection of the patrols was carried on by four inspectors under the chief inspector, whose duty it was to see that the patrols were acting as ordered by the Board and had the necessary equipment. The patrols were from 15 miles to 35 miles in length and were covered by patrolmen with velocipedes or power speeders. The organization and the system of checking patrols has been specially well worked out on the Canadian Northern railway.

The locomotives were inspected regularly and were generally found in good condition to prevent the escape of sparks. In 255 inspections made only eleven locomotives were found defective.

The railway companies are observing the regulations requiring the clearing of the right of way of combustible material and the conditions on the right of way have greatly improved, but the slash resulting from tie cutting and other operations outside of the right of way is unfortunately still greatly in evidence and does much to nullify the good effects of the better protection on the right of way.

The most unsatisfactory condition in connection with the railways was along the line of the Hudson Bay railway which, being a government line, is not subject to the jurisdiction of the Board of Railway Commissioners, and over which the inspectors of the Forestry Branch could not exercise authority. The locomotives used on the road were in a defective condition, eleven out of twelve being found so on inspection. Sufficient care was not taken by the contractors in clearing the right of way to prevent fire spreading. With this situation, combined with a specially dry season, there was unfortunately a great deal of fire along the route with the result that some 1,000,000 acres which were mostly covered with trees of greater or less value were burned over. The best methods of protection for this line have been

discussed with the Department of Railways and Canals, and a plan of co-operation has been arranged which it is hoped will result in better enforcement of the terms of the contract in regard to equipment of locomotives and prevention of fire and in more satisfactory conditions for the coming year.

FOREST RESERVES.

There are two requirements coming out more clearly with the development of the forest reserves as absolutely necessary to their proper administration.

The first is a staff who are qualified for and interested in their work. So much depends on the initiative and the energy of the forest ranger and he is for so large a part of his time, necessarily, working without immediate supervision that a merely perfunctory interest in the forest on the part of the ranger is disastrous. The plotting on the reserves of the fires occurring from year to year shows very clearly the rangers that are careless and the heavy and irreparable losses that result.

The second is organization and preparation. Fire-fighting is generally considered as something that may be dealt with as an emergency on the spur of the moment, but experience shows that such a policy accomplishes little. The facilities for reaching and handling fire must be provided beforehand, the methods by which it is to be fought must be worked out and the provision of men, equipment and supplies arranged for. If this work of preparation is not done effective results cannot be obtained when the emergency comes. No less true is it of forest management. There must be a planning and looking ahead that will keep the forest reproducing or greater expense will be required later to repair the damage done by careless operations.

Staff.—The permanent staff on the forest reserves is as follows: district inspectors, 4; supervisors, 9; forest assistants, 13; forest rangers, 79; office staff, 17; total, 122.

The inspection districts are arranged generally so as to coincide with provincial boundaries and each inspector is responsible for all work on the forest reserves and for the fire patrols in localities outside of the reserves in his district. The supervisor is in charge of one forest reserve, or in one case of a group of reserves, and in some cases is a technically trained forester and sometimes not. He must, however, always be a good administrator. The forest assistant is always a technically trained forester and gives special attention to the technical side of the work while gaining experience in administration. Each ranger has a district of the reserve, for the protection and management of which he is responsible under the instructions of the supervisor. The lack of winter work on the forest reserves, owing to the smallness of the timber operations and the fact that the operations on licensed berths are not under the supervision of the forest reserve staff, makes it necessary to keep the number of permanent rangers as small and the size of the ranger districts as large as possible, and to use temporary help largely during the summer when improvement work can be done and protection is required.

Improvements.—The necessary improvement work for the protection of the forest reserves has been continued during the past year. The following is a statement of the improvements and their cost:—

SUMMARY of Improvements and Cost.

Class of Project.	No.	Total cost.*	Average cost.
		$	$
Ranger houses, new construction	13	16,164	1,243
" maintenance	24	1,503	63
Ranger cabins, new construction	48	11,644	242
" maintenance	30	1,502	50
Stables, new construction	35	6,599	189
" maintenance	17	610	36
Other buildings, new construction	18	1,279	71
Lookout towers, new construction	12	1,729	144
Bridges, new construction	10	800	80
	miles		
Telephone line, new construction	231	15,968	69
" maintenance	215	1,316	6
Fireguards cleared	66	3,106	47
" plowed	158	1,117	7
Roads, new construction	240	14,004	60
" maintenance	211	2,016	9
Trails, new construction	665	29,582	59
" maintenance	596	3,433	6
Other improvements such as fences, etc	.....	7,716	.....

*Including cost of ranger labour.

On some of the older reserves the system of improvements has nearly reached completion and on all except the most recently organized the plans are all now fully laid out. The roads and trails have been planned to connect the headquarters of each reserve with the ranger districts and to give access to all parts of each of such districts. The best lookout points have been located and made accessible. There now remains the provision of methods of communication, for the rapid conveyance of information is essential. For this purpose the telephone is one of the most reliable means and telephone systems are planned for all the reserves. The general plan for the telephone lines on the Rocky Mountains forest reserve, the most extensive of all, has been worked out and construction will now be steadily undertaken. The planning of this system has required a great deal of care and consideration as there are many factors to be provided for, if such a long and widespread series of connections is to work satisfactorily. Until the telephone system can be completed, and even afterwards as an auxiliary thereto, it is proposed to use a system of signalling by heliograph or otherwise, wherever it is possible and the rangers can be trained to its use.

Timber Operations.—The farmers in the West were in a better position last year to take out timber permits, but the heavy snow and severe winter weather interfered considerably with operations in the forest. The number of permits issued was 3,153, and the quantity cut thereunder was 4,475,493 feet board measure, 31,000 cords, 807,697 building logs, besides other products. The number of free permits was 1,973.

The number of sales of timber on which operations were carried on during the year was eighteen, five of which were made during the past year. These sales are of small quantities of timber, the regulations not authorizing the disposal of more than five million feet in any sale. The cut of saw-timber was 2,057,107 feet board measure, and of mine props 1,384,801 feet board measure and 632,938 lineal feet.

Both on permit and sale operations the disposal of debris has been carried out in some places remarkably well, in others only fairly satisfactorily. The thorough and careful manner in which low stumps have been cut and in which the debris of logging has been piled and burnt on some of the sales demonstrates the feasibility, financially and otherwise, of such an improvement in methods. Some of the operators go so far as to say that they consider the cost of disposal of the brush as nothing, as the advantage of having a clean floor on which to skid the logs compensates for the trouble of burning. The difficulty of having such an improvement in operations carried out arises from several causes: (1) lack of knowledge of what is required which can be removed only by education; (2) fear of the additional expense that may be involved, and (3) the idea that some operators start in with that what should be done is not to try to live up to the terms of the sale but to see how much they can get out of doing.

The danger from old slashings is the worst menace that the forests have and to perpetuate such conditions and increase the danger by allowing further slashings to accumulate is, in the present stage of development, almost criminal and would set back progress in forest management indefinitely.

Fires.—There were 205 fires in the forest reserves which covered a total area of 359,938 acres and damaged 70,554,000 feet board measure of timber and 1,072,000 cords of wood. Settlers are in the lead as a cause of fire, closely followed by "campers and travellers," and these two causes were responsible for nearly half of the fires.

The plotting of the fires on the reserves for several years shows that most of them occur on the edge of the reserve or come in from outside of it, so that more stringent regulation and legislation are required on the wooded lands in the immediate vicinity of the reserve. The incendiary fires, though small in number, indicate an unsatisfactory condition of public opinion in some districts, but this has been met by several prosecutions in such cases, and it is hoped will be remedied in time by education as to the value of the forest, to which special attention is being given.

Cause.	Number of Fires.	Percentage.
Railways	18	8·78
Brush burning	4	1·95
Settlers	49	23·90
Campers and travellers	44	21·46
Incendiary	12	5·85
Lightning	5	2·44
Other causes	2	0·98
Unknown	71	34·64
Total	205	100·00

Surveys.—On the Rocky Mountains forest reserve the surveys to locate the important trails and watercourses were continued and have now been sufficiently completed in the whole of the reserve south of the Athabaska river to make it possible to map and estimate the timber areas accurately. Reconnaissance surveys for this purpose can now be undertaken.

The marking of the boundaries of the Cypress Hills forest reserve was carried out and arrangements have been made with the Surveyor General for surveys of the boundary lines of other reserves where the location is uncertain.

Grazing.—The grazing regulations providing for the use of grazing on the forest reserves under yearly permit are on the whole working out satisfactorily. The total number of cattle grazed was 12,923 and of horses 1,870. This is a slight reduction from the total for the previous year, as although there was an increase in all the reserves except the Crowsnest there was a decrease of over three thousand head on that reserve, owing mainly to the inclusion of several of the grazing areas on the reserve in the extension of the Waterton Lakes park. There should be a steady increase from this time forward, however, as there is still a large amount of grazing land on the forest reserves which is not stocked to capacity.

The number of sheep grazed on the forest reserves in 1914 was over 12,000 and for the past year practically none. The sheep were grazed in 1914 in the Livingstone valley in the Crowsnest forest but considerable objection was raised by farmers living on the route by which the sheep were driven into the reserve, as it was claimed that considerable damage had been done to crops and grazing lands. In consequence of this and on the urgent request of the provincial authorities and the committee of the Provincial Legislature, it was decided that any permits for sheep granted in this forest in the year 1915 should be subject to the condition that the sheep should be taken in by railway. The stock owners did not care to take out permits under such a restriction. Consequently, no application for permits for sheep were received. An Act of the Provincial Legislature has since been passed regulating the driving of sheep, so that the restriction is not further necessary.

The organization of grazing permittees into stock associations to assist in the arrangement of the grazing in different districts has been helpful and has been carried out without difficulty, except in one or two cases where the situation has been understood.

An investigation of the forage plants on the Crowsnest forest was made by the agrostologist of the Department of Agriculture and much valuable information obtained. It is important for the proper management of the grazing lands that many special investigations should be made, and at the earliest possible opportunity arrangements should be made for the appointment of a well-qualified man to deal with this matter.

The grazing regulations have not been put into force in the railway belt in British Columbia, owing to difficulties noted in last year's report, but the question has been discussed from time to time with representatives of the stock owners and others, and it is hoped that the difficulties in the way will be removed in time. The trails constructed on the forest reserves have made available grazing lands and hay meadows hitherto inaccessible and special methods of dealing with such lands are being considered.

Fish.—The reciprocal arrangement made with the Department of Marine and Fisheries in the interests of the protection of the fisheries in waters situated along the boundaries of the forest reserves has been continued. Under this arrangement certain Dominion fishery guardians are given the authority of forest officers, and certain forest officers are given the authority of Dominion fishery guardians, in order that they may be enabled to proceed beyond their ordinary bounds of jurisdiction in following up cases of infraction of the fishing regulations. The arrangement has worked out so satisfactorily that a larger number of officers will be appointed under its provisions during the coming season.

The regulations of the forest reserves relating to fishing have been found to work satisfactorily, except in a few minor particulars, which have already been amended. These amendments, made mainly in conformity with amendments to the general fishery regulations introduced by the Department of Marine and Fisheries, provide that British subjects may fish for the coarser species of fish within the province in which they reside without a permit, and that in British Columbia, where trout are the only prevailing sport fish, trout may be caught without a permit by resident British subjects. Owing to the fact that Paul lake in the Niskonlith forest reserve is situated at a lower altitude than other lakes in the British Columbia forest reserves the fishing season has been made to open one month earlier, though the season is still later than that provided by the Dominion fishery regulations for waters outside the forest reserves, which are nearly all at a lower elevation. Other changes have been made to meet the special requirements of the northern portions of Manitoba, Saskatchewan and Alberta, such as the continuation of net fishing in the larger bodies of water, where netting for commercial and domestic purposes

has been carried on for years past. In those reserves which lie closer to settlement, however, such changes regarding fishing tackle, size limit and per diem catch have been made as will conserve and improve the sport fishing without imposing unnecessary restrictions upon the legitimate sportsman. In the last regulations issued by the Department of Marine and Fisheries provision is made whereby a permit issued under the forest reserves regulations will entitle the permittee to fish in any waters in the province outside the forest reserve. This is a reciprocative measure following the provision in the forest reserves regulations by which permits issued under the Dominion fishery regulations to fish in waters outside the forest reserves are made to apply to waters inside the forest reserves. This will make it unnecessary for fishermen to take out more than one permit for the season.

Game.—Some changes have been made by two of the provincial governments in the boundaries of the game preserves established by them in forest reserves. In Manitoba such changes have been slight, only the Riding Mountain game preserve in the Riding Mountain forest reserve having been changed by the addition of four townships. In this forest reserve, as in others, the forest officers are co-operating with the provincial authorities in the work of game protection. Some idea of the extent to which the hunting territory in this reserve is used during the hunting season may be obtained from the fact that over seventy-five permits were issued during the year by the forest officers for the erection of hunters' cabins, besides a number of permits for the location of tents during the hunting season. In Saskatchewan some radical changes both in the Game Act and in the location and limitation of the game preserves have been made. The Saskatchewan Game Act formerly provided that all forest reserves established by the Dominion should automatically become provincial game preserves, but in the new Act this automatic feature is dropped and only those areas described in the Act are to be game preserves. With this change it is now possible for the provincial authorities to exercise some discrimination in creating game preserves in forest reserves, and the provision as it now stands is similar to the corresponding provision in the Manitoba Game Act. In the case of large forest reserves, which in the old Act were closed against hunting throughout their entire area, it is now possible to confine the game refuge within certain reasonable limits and to allow hunting in the remaining portions of the forest reserve. This is the course which is now followed in regard to several of the larger forest reserves in Saskatchewan. Two benefits amongst others will result, one is that the public will be afforded a good hunting ground in close proximity to a game preserve, the other is that, owing to the supervision which the forest officers are able to give, the game will be protected, as it has been heretofore, during the close season, and in the course of their ordinary patrols during the hunting season the forest officers will be in a position to see that the game laws are observed. These changes will have another desirable effect in that they will relieve a certain amount of opposition to the extension of the system of forest reserves on the part of those persons who were being deprived of hunting opportunities by the former legislation, which made it illegal to hunt on any part of any forest reserve at any time.

Reference was made last year to the fact that the Stony Indians of Alberta had at last been brought under the operation of the Game Act of the province. This was a step forward in the work of game protection on the eastern slope of the Rocky mountains. The next step will be to secure the observance of the law by the Indians, and while drastic measures are not desirable it is necessary that persistent efforts should be made to induce the Indians to be governed by the provincial regulations. The reports received do not indicate that there has been any appreciable diminution of illegal hunting by these Indians during the past year, and it is clear that only with the co-operation of the Department of Indian Affairs can these Indians be brought to change their lifelong habits of slaughtering game with utter disregard for the future

supply, and to be governed by laws designed to prevent the process of extinction and to increase the supply of game which will thus be available for the Indians as well as others.

Among the chief offenders are a number of Stony Indians who some few years ago located without authority in the valley of the North Saskatchewan river, on what are known as the Kootenay plains, in the Rocky Mountains forest reserve. Efforts have been made by the forest officers and by officers of the Indian Department to induce these Indians to remove from the forest reserve, but the exaggerated value placed by the Indians upon their improvements has made progress very slow thus far. It is hoped, however, that ultimately these Indians may be removed without hardship and without friction.

Reports have come in from different forests of serious damage done to young trees by rabbits. Particularly when the periodic large increase in the number of rabbits comes they swarm in the woods in such numbers that large areas of young pine, spruce, tamarack, etc., are damaged so as either to be killed or to grow in such distorted form as to be of little value. The report from one forester gives the opinion that the destruction caused by rabbits is greater than that caused by fire. This only repeats experience elsewhere. In Great Britain the rabbits form one of the most serious hindrances to the establishment of forest plantations. The methods of control required for dealing with this difficulty require thorough study.

FIRE-RANGING.

The fire-ranging in the timber areas outside of forest reserves was organised in twelve districts, each in charge of a chief fire ranger. The number of temporary fire rangers under their supervision was 189. On the whole the supervisory work by the chief rangers was good and those who have been in charge of districts continuously for several years have greatly improved the organization and efficiency of the service. A good proportion of the rangers, though only employed for the danger season in each year, are re-appointed from year to year and, with some exceptions, are giving good service.

The equipment for fire fighting has been brought up to a better standard and emergencies can be much better met.

Little expenditure can be made on permanent improvements in the territories outside of forest reserves, but in some places the rangers have been able to put in trails, bridges and lookout towers that have given much improved facilities for handling fire.

The fire ranging districts and the number of rangers employed are as follows:—

Manitoba inspection.—Southern Manitoba, 13; Northern Manitoba, 13; The Pas, 14.

Saskatchewan inspection.—Battleford, 14; Prince Albert, 16.

Alberta inspection.—Edmonton, 46; McMurray, 10; Slave, 3; Mackenzie, 4.

British Columbia inspection.—Coast 23; Revelstoke, 16; Salmon Arm, 17. Total, 189.

The number of fires (outside of forest reserves) with their causes, incomplete as previously explained, are as follows:—

Cause.	Number of Fires.	Percentage.
Railways	105	8·40
Saw-mills and logging	34	2·72
Brush burning (not settlers' clearing)	6	0·48
Settlers	197	15·76
Campers and travellers	366	29·28
Incendiary	2	0·16
Lightning	55	4·40
Other causes	28	2·24
Unknown causes	457	36·56
Total	1,250	100·00

FOREST SURVEYS.

During the year six reconnaissance parties carried on the exploration of public lands to classify the lands in regard to their suitability for agriculture or forest production, and also with the object of obtaining information of the timber resources of the country examined. The parties were located as follows: Manitoba inspection district, two parties; Saskatchewan inspection district, two parties; Alberta inspection district, two parties.

In Manitoba Mr. J. D. Aiken continued the examination of eastern Manitoba, covering an area of approximately 5,725 square miles on the east shore of lake Winnipeg between Manigotagan river and Poplar river eastward to the Ontario boundary. The country is of Laurentian formation and is fairly level with sandy and rocky ridges, seldom reaching a height of more than 100 feet above the general level of the country. The ridges are interspersed with muskegs covered with black spruce and tamarack. In the interior the soil is of glacial origin, being mostly sandy and rocky with boulders, and is unsuitable for agriculture. In places at the mouths of the rivers are deposits of blue clay, fine stratified sand or soil of a silty or clayey nature which is of agricultural value. The areas of good soil are very small, however.

Fully 70 per cent of the area examined has been burned over during the last thirty years, consequently not very much mature timber is found. The poplars and white spruce occupy the better soils while the jack pine occupies the ridges of the interior.

The main rivers draining the area examined are the Bloodvein, the Pigeon, the Berens, the Leaf and the Poplar. There is a general rise of about 350 feet from lake Winnipeg to the Ontario boundary. Near the lake the rivers are very sluggish, but in the interior they are much swifter, with numerous small falls not exceeding 30 feet in height.

The other Manitoba party under Mr. C. E. Maimann examined an area of 5,400 square miles between lakes Winnipeg and Winnipegosis from about township 29 north to the Saskatchewan river. The country examined is generally level, only rising between 100 and 200 feet above the level of the lakes; consequently, muskegs are large and numerous. Between the muskegs lie long ridges with a soil consisting of sand and gravel interspersed with small boulders. With the exception of a few small areas the soil is unfit for agricultural purposes. Along lake Winnipeg, on the drier areas, the soil is a calcareous gravel, with large boulders in places. Practically the same kind of soil was found along lake Winnipegosis. On the inland ridges the soil is sandy or light gravel, strewn with innumerable boulders. The muskegs are generally covered with wet moss from six inches to three feet in depth with an impervious clay subsoil strewn with small boulders.

The whole area examined has been burned over during the last eighty years and very few of the original mature stands are left. The best stands of spruce and poplar are found close to the lakes, while jack pine covers the ridges and black spruce and tamarack some of the muskegs. Other muskegs are open bogs.

In central Saskatchewan, Mr. G. M. Dallyn examined about 2,600 square miles of country in the vicinity of Candle lake, Montreal lake and Crean lake. The area examined, which is drained by the Churchill and Saskatchewan river systems, is moderately flat with numerous low knolls and a few prominent ridges. The soil varies from pure quartz sand to sandy clay loam. The subsoil varies from granite rock to gray sand, north of the 15th base line, and south thereof from sand to clay. Sandy subsoil is the rule, however.

White spruce comprises the only virgin timber. Some excellent stands of spruce and poplar are found east of the lower end of Montreal lake. Aspen is the most common species, but considerable jack pine and black spruce are found; also some tamarack. Merchantable timber covers only about 7·5 per cent of the area examined, while stands in the pole stage and brulé with reproduction cover about 65 per cent.

Muskegs with jack pine knolls cover about 20 per cent and lakes about 7·5 per cent. Most of the area examined is strictly forest land. The reproduction is good over practically the whole area, and if protected from fires this country would in time be covered with a great spruce forest, spruce being the climax tree on practically all the better soils in the region.

Another party in Saskatchewan was in charge of Mr. A. V. Gilbert, and the examination extended over 1,730 square miles of the country between townships 57 and 60, inclusive, and ranges 13 to 27, inclusive, west of the 3rd meridian in the vicinity of Makwa lake.

South of this lake the country is hilly, west and east thereof it is rather level, except between Meadow lake and Green lake, where some hilly country with numerous sloughs is encountered. Most of the lakes and creeks are boggy. An exception is Makwa lake, which has high banks. The soil is mostly a clay loam with clay subsoil, but sand ridges covered with jack pine are found over the whole area. Some of the country examined has great agricultural possibilities, but other portions are strictly forest land.

Some good white spruce is found in places. This species has a very rapid growth in this region, eighty-year-old trees with a diameter of 22 inches being found. Poplar is the principal species found as far as quantity is concerned, but the spruce reproduction throughout most of the poplar area is most promising.

In Alberta, Mr. R. D. Jago examined an area of five townships around Buck lake which had been previously temporarily reserved on the recommendation of the Dominion Lands Surveys, it being reported that the area contained good timber. This land is described as being hilly and broken with numerous muskegs. The soil is sandy and stony with numerous ridges covered with jack pine.

Some very good timber is found in the vicinity of Buck lake, consisting of spruce, poplar and jack pine. With the exception of one township all the lands in the temporary reservation (or four townships) are recommended for inclusion in a forest reserve.

A considerable area of land surrounding the temporary reservation at Buck lake was also examined. Most of this land was found to be suitable for mixed farming, having a soil of clay or sandy clay covered with a good loam top-soil.

Mr. Jago also made an examination of the region in the vicinity of Christina lake on both sides of the Alberta and Great Waterways railway now under construction. These lands are, generally speaking, unfit for agriculture. They are rugged and hilly in places. Much of the land is low and wet with a good deal of muskeg, broken by narrow sand ridges covered with jack pine. Very little mature timber is left, the country having been practically all burned over some eighty years ago. The reproduction is good. Altogether 4,900 square miles were examined in this survey.

In the season of 1915, Mr. J. A. Doucet examined the Peace River Block in British Columbia, and a large tract of land situated in the province of Alberta and comprising the Birch hills, the plateau lying between Spirit river and Pouce Coupé, the larger portion of the Clear hills and lands in vicinity. The total area examined was 13,800 square miles. The survey was made at an average cost of 42 cents per square mile.

The country belongs partly to hilly land and partly to table- or plateau-land. The elevation of the hilly land ranges from 2,300 to 4,400 feet above sea-level. The table-land is found along the main streams and more particularly in the vicinity of Peace river, which is the main artery. The soil of the table-land although commonly rich clay loam is often an inferior whitish clay or even silt clay. Through the hilly land, agricultural soil is found in small tracts in the valley bottoms and on the lower hill slopes. In the Clear hills the soil is very poor.

Approximately 21 per cent of the total area examined bears a forest over fifty years old. Its stand is estimated at the round figure of 12,400,000,000 feet board measure and 19,500,000 cords (trees below 8 inches D.B.H.). Spruce and lodgepole pine form about 87 per cent of the stand, estimated in feet board measure. The pole forest area covers approximately 3,320 square miles and its age averages about 35 years. Its total production would be about 19,200,000 cords, in which poplar would represent about 73 per cent of the stand. The remainder is mostly spruce and pine. The total area of burned-over land is 4,540 square miles. Most of this land has been burned during the last four decades and about 50 per cent is restocked. The balance is mostly restocking or at the seedling stage.

The prairie, brush, and open grass land covers an area of 2,714 square miles, or about 20 per cent of the total. It is estimated that besides this land there is approximately 3,210 square miles of burned-over and wooded land which could be classified as land suitable for farming or grazing purposes. The prairie land is the result of repeated fires on good soil.

Of the total area examined, some 6,789 square miles are recommended for reservation. The area is comprised in eight different tracts. They contain approximately 80 per cent of the total sawlog and 50 per cent of the cordwood stands given above.

FOREST PRODUCTS LABORATORIES.

The regular work of the Forest Products Laboratories has been considerably interfered with by the number of the staff who have enlisted in the army and by the fact that some members have been devoting considerable time to investigations in connection with war munitions.

The divisions of timber physics, timber tests, pulp and paper and wood preservation are now organized and are doing investigation and experimental work of great value to the wood industries of the Dominion. The interest taken in the laboratories by those engaged in the manufacture of wood products, and the many requests for information received from all over the country, show that the work is proving useful and is appreciated. It was not proposed at the present time to recommend the organization of a division of wood distillation but the request from the Canadian Mining Institute for an investigation of the production, from Canadian woods, of oil for use in ore flotation has made it necessary to consider the establishment of such a division without delay.

The fluctuation in the staff as a result of enlistments, and one or two changes resulting from business opportunities offered by companies, have impressed early in the history of the laboratories the important bearing that permanency in the staff has on the continuity of investigations, and it is necessary to consider carefully the best plan that can be adopted to ensure permanency in the staff and to keep alive aggressive interest in scientific investigation. The work of investigation must be progressively comprehensive and efficient if it is to accomplish the purposes desired in the establishment of the laboratories.

WOOD BISON.

The patrol in connection with the wood bison has been continued and efficient service has been rendered in locating and extinguishing fires on the buffalo range. In spite of these efforts a considerable area was burned over, though not sufficient to threaten the supply of winter feed for the bison.

The matter of reducing these periodical fires to the minimum is important, as it is not difficult to imagine circumstances under which a series of such fires, spread over

considerable areas, might reduce the quantity of available feed to a point where the welfare of the herds would be interfered with. An endeavour will be made, therefore, during the coming year to strengthen the patrol to some extent, and it is intended to consider this matter of fires in conjunction with the Department of Indian Affairs, to see whether it is possible that united action in some form may be taken which will reduce this danger.

R. H. CAMPBELL,
Director of Forestry.

STATEMENT of Revenue, Fiscal Year, 1915-16.

Forest Reserve.	Timber Fees and Dues.	Timber Seizures	Grazing Permit and Trespass Dues.	Hay Permit and Seizures	Surface Rental.	Special Uses.	Nursery Stock.	Unclassified.	Total.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Turtle Mountain	81 95	2 50	760 75	191 25	95 00	0 75		249 75	1,381 95
Spruce Woods	11 75	15 00	519 50	61 05					607 30
Riding Mountain	4,252 63	301 77	158 75	434 85	10 00	18 25			5,176 25
Duck Mountain	2,443 27	51 75		71 60	200 00	1 75			2,768 37
Moose Mountain	235 00	132 90	236 50	200 40	15 00				819 80
Beaver Hills	20 25		154 55	200 20		1 00			376 00
Porcupine-Pasquia	787 57	151 70	23 95	83 60		52 00		2 50	1,101 32
Fort à la Corne	299 50	91 43		5 25					396 18
Pines	229 75	5 00	6 45	36 50					277 70
Nisbet	545 95	687 75	14 35	32 55	0 25	2 50			1,283 35
Big River	3 00			34 75		1 25			39 00
Steep Creek	27 50								27 50
Sturgeon				41 85					41 85
Keppel	266 48		28 50	13 70		0 75			309 43
Manito	134 25		294 10	28 05		3 00			459 40
Dundurn	3 25		163 20	10 05		2 00			178 50
Seward			27 85	28 95		0 75			57 55
Elbow	20 25	8 00	449 38	107 80		2 75			588 18
Cypress Hills	763 41	36 50		378 25	20 00				1,198 16
Cooking Lake	10 77		84 25	135 00					230 02
Crowsnest	3,862 55	79 84	1,585 12	30 20	48 70	23 75			5,630 16
Bow River	131 45	19 10	1,130 19	40 70	88 88	5 75			1,416 07
Clearwater	3,714 82		12 75		53 55	100 75			3,881 87
Brazeau	652 07	790 25	6 40			10 00			1,458 72
Lesser Slave	2 54	2,461 87				0 25			2,464 66
British Columbia	234 45			14 75	77 40	18 00			344 60
Indian Head Nurseries						46 00	1,619 85	312 91	1,978 76
Totals	18,734 41	4,835 36	5,656 54	2,181 30	618 78	291 25	1,619 85	555 16	34,492 65
Refunds									728 70
Net revenue									33,763 95

STATEMENT of Timber Permits, Fiscal Year 1915-16.

Reserves.	No. of Permits.		Kinds and Quantities of Timber Authorized to be Cut.								Dues and Fees.
	Free.	Paid.	Roof Poles.	Fence Rails.	Fence Posts.	Saw Timber.	Mine Timber.	Building Logs.	Green Fuel.	Dry Fuel.	
						Ft. B.M.	Lin. Ft.	Lin. Ft.	Cords.	Cords.	$ cts.
Turtle Mountain	25	23			645	36,830		208		662	81 95
Spruce Woods	14	3				15,250		5,000		195	11 75
Riding Mountain	187	390	450	2,400	20,437	1,778,801		21,962	200	2,442	4,027 63
Duck Mountain	359	140	400	450	17,980	1,797,478		218,447		3,297	1,543 27
Moose Mountain	8	87	650		3,800			5,000	555	130	235 00
Beaver Hills	81					194,250				1,000	20 25
Porcupine-Pasquia	85	21	3,300	4,000	5,800	367,511		2,400		2,319	512 07
Fort à la Corne	140	23	7,300	2,000	12,297	119,503		18,900		2,274	174 50
Pines	37	26	1,700	500	3,550	4,450		6,369	220	1,213	229 75
Nisbet	46	57			2,650			4,700	50	1,904	545 95
Big River	12		1,130	3,500	1,100	9,250		6,000		210	3 00
Steep Creek	14	5	1,250	2,000	3,040			3,000		318	27 50
Keppel	249	77	22,017	12,950	27,880			157,981	370	3,374	260 73
Elbow	81			300	1,140					1,043	20 25
Manito	68	53	4,975	22,900	14,325	19,250		26,470	321	1,195	134 25
Dundurn	13				960					207	3 25
Cypress Hills	353	205	132,780	153,115	94,510	132,920		280,800	193	3,823	608 50
Cooking Lake	8	2	600		200			1,000		170	9 92
Crowsnest	132	47	3,568	4,050	11,771			28,212		2,044	388 60
Bow River	30	16	4,950	2,350	5,000			13,800		601	79 55
Clearwater	22	2					8,000			550	33 50
Brazeau	4									100	1 00
Lesser Slave		1						448			2 54
B.C. Reserves	5	2	100					7,000		20	3 75
Totals	1,973	1,180	185,170	210,515	227,085	4,475,493	8,000	807,697	1,909	29,091	8,958 46

Timber Seizures, Fiscal Year 1915-16.

Reserve.	No. of Seizures.	Description and Quantities of Timber Seized.									Trespass Dues.	Collections account arrears and current seizures.
		Roof Poles.	Fence Rails.	Fence Posts.	Saw Timber.	Ry. Ties.	Telegraph Poles and Piling.	Building Logs.	Green Fuel.	Dry Fuel.		
					Ft. B.M.		Lin. Ft.	Ft. B.M.	Cords.	Cords.	$ cts.	$ cts.
Turtle Mount'n.	1								6	3	2 50	2 50
Riding Mount'n.	39	152	60	80	9,500			21,533			248 59	301 77
Duck Mount'n.	4				12,580			2,186		18	111 52	51 75
Spruce Woods.	1							550			15 00	15 00
Moose Mount'n.	20	1,178		145				200	34		81 00	132 90
Pines	1			5							5 00	5 00
Nisbet	3									428	133 75	687 75
Fort à la Corne	1				60,948						91 43	91 43
Porcupine-Pasquia	17			1,600	23,845		2,000			12	298 82	151 70
Elbow	1								5		8 00	8 00
Big River	1				19,889						119 33	
Cypress Hills	2							920	5		36 50	36 50
Crowsnest	8		115		5,875			3,192		5	79 84	79 84
Bow River	3		515								19 10	19 10
Brazeau	1				7,500			5,000			29 00	790 25
Lesser Slave												2,461 87
Total	103	1,330	690	1,830	140,137		2,000	33,581	50	466	1,279 38	4,835 36

Grazing Permits issued, Fiscal Year 1915-16.

Reserve.	No. of Permits.	Number of Stock.				Dues and fees collected.
		Cattle.	Horses.	Sheep or Hogs.	Total.	
						$ cts.
Turtle Mountain	62	909	7		916	708 75
Riding Mountain	27	587	10		597	158 75
Spruce Woods	37	550			550	519 50
Moose Mountain	35	815	79		894	231 25
Porcupine-Pasquia	4	63	11		74	23 95
Pines	4	19			19	6 45
Beaver Hills	10	464	79		543	154 55
Nisbet	3	38	4	9	51	14 35
Keppel	7	86	1		87	28 50
Manito	33	657	293		950	283 60
Elbow	182	888	440		1,328	391 33
Seward	7	106	11		117	27 85
Dundurn	9	460	90		550	163 20
Crowsnest	58	4,115	433		4,548	1,585 12
Bow River	32	2,941	348		3,289	1,130 19
Clearwater	1		50		50	12 75
Brazeau						6 40
Cooking Lake	6	225	14		239	69 25
Total	517	12,923	1,870	9	14,802	5,515 74

Statement of Hay Permits, Fiscal Year 1915-16.

Reserves.	No. of Permits.	No. of Tons.	Dues and Fees.
			$ cts.
Turtle Mountain	107	1,645	191 25
Spruce Woods	38	443	61 05
Riding Mountain	175	3,141	434 85
Duck Mountain	38	566	66 00
Moose Mountain	51	1,611	182 85
Beaver Hills	56	1,862	200 20
Porcupine-Pasquia	16	522	64 10
Fort à la Corne	3	45	5 25
Pines	20	293	35 65
Nisbet	18	248	32 55
Sturgeon	5	202	41 85
Big River	8	327	34 75
Elbow	47	960	107 80
Seward	15	252	28 95
Manito	14	245	28 05
Keppel	10	112	13 70
Dundurn	2	62	10 05
Cypress Hills	124	3,521	378 25
Cooking Lake	26	1,003	135 00
Crownsnest	27	204	27 15
Bow River	14	372	40 70
B. C. Reserves	9	145	14 75
Total	823	17,781	2,134 75

Timber Cut on Forest Reserves under authority of Timber Sales, Fiscal Year 1915-16.

Reserve.	Previous sales still operating.	Sales made current year.	Saw Timber.	Mine Timber.					Dues collectable.
				Props.	Props.	Lagging.	Lagging.	Lagging.	
			Ft. B.M.	Ft. B.M.	Lin. Ft.	Cords.	Ft. B.M.	Lin. Ft.	$ cts.
Riding Mountain	1		40,805						122 41
Fort à la Corne		1	88,697						160 05
Pasquia		1							
Porcupine	1	1	35,659						106 98
Cypress Hills	1		78,581						117 86
Crowsnest	5	2	1,320,848	111,696	451,860		30,594		2,788 24
Clearwater	2		404,083	1,273,105	181,078	606			4,939 68
Brazeau	2								
Fly Hills	1		88,434						66 32
Total	13	5	2,057,107	1,384,801	632,938	606	30,594		8,301 54

STATEMENT showing the quantity of Timber Sold and Revenue Due during the Fiscal Year ending March 31, 1916, on License Timber Berths within Dominion Forest Reserves.

MANITOBA.

Forest Reserve.	Timber Berths.	Areas in Reserve.	Quantities Sold.			Revenue.		
			Lumber.	Laths.	Other Products.	Dues Payable.	Rent Payable.	Total Payable.
	No.	Sq. M.	Ft. B.M.	No.		$ cts.	$ cts.	$ cts.
Riding Mountain	5	45	3,129,253	.....	.....	1,564 62	227 15	1,791 77
Duck Mountain	11	100	3,289,698	828,600	.....	1,939 03	499 90	2,438 93
Total	16	145	6,418,951	828,600	.....	3,503 65	727 05	4,230 70

SASKATCHEWAN.

Porcupine and Pasquia	49	1,039	34,839,913	6,810,050	1,781 fence posts	18,880 17	5,086 90	23,967 07
Sturgeon	12	178	13,455,225	2,088,500	.....	7,040 87	891 33	7,932 20
Big River	3	261	22,221,882	9,508,200	478 posts 489 cords	7,135 02	1,303 08	8,438 10
Nisbet and Pines	5	117	.....	.....	411 cords 3,900 fence posts	141 97	173 15	315 12
Total	69	1,595	70,517,020	18,406,750	as above	33,198 03	7,454 46	40,652 49

ALBERTA.

Crowsnest	12	259	1,290,787	.....	.....	646 40	1,295 95	1,942 35
Bow River	16	374	14,464,373	279,075	3,257 fence posts 513 cords	7,234 76	1,860 95	9,095 71
Clearwater	4	378	.....	.....	.....	.....	1,887 80	1,887 80
Brazeau	12	226	1,255,428	.....	50,080 Ry. ties 33,060 lin. ft. piling.	1,544 22	1,131 30	2,675 52
Total	44	1,237	17,010,588	279,075	as above	9,425 38	6,176 00	15,601 38

BRITISH COLUMBIA.

	No.	Sq. M.	Ft. B.M.	No.		$ cts.	$ cts.	$ cts.
Total of all B.C. reserves	11	154	.....	.....	.....	.....	667 85	667 85
Grand total	140	3,131	93,946,559	19,514,425	.....	46,127 06	15,025 36	61,152 42

The Grand Total of Other Products comprises 9,425 fence posts, 1,413 cords, 50,080 railway ties and 33,060 lin. ft. piling.

The following report concerns the work of the Tree-Planting Division during the fiscal year 1915-16.

APPENDIX No. 1.

Climatic conditions prior to June 15 were somewhat trying. The spring opened up early but with rather less precipitation than usual. This condition, following a winter with practically no snow, left the soil dry; consequently, except on soils that were particularly well prepared, much of the newly planted stock had difficulty in surviving the shock of transplanting. However, on the whole the results of new plantations were very good indeed with the exception of the cutting stock, which, as might have been expected, showed a rather greater percentage of failures than is usually experienced. In the nurseries the dry spring caused more blanks than usual in the conifer transplant plots. During the early part of the season, too, exceptionally late and severe frosts occurred. In the nurseries seedling stock of ash suffered severely, in some plots from 35 per cent to 40 per cent of the small plants being killed outright. In the case of two-year seedlings the plants were badly cut back and although the subsequent growth was good most of them show a double shoot, owing to the terminal buds having been destroyed.

In the permanent plantations the ash were completely defoliated on two separate occasions, so that the growth of this variety during the season was practically nil and, no doubt, it will require a year or two for these trees to regain their normal growth.

The latter part of the season in the greater part of the prairies was exceptionally wet, although in one or two isolated districts conditions were exceptionally dry. Notwithstanding the extra amount of precipitation, which was of course particularly beneficial in the case of newly set out plantations, the growth on the older plantings was generally small. In some cases, where grass had been allowed to work in among the trees, individual specimens showed undoubted signs of suffering from lack of moisture. This is due to the fact that, following two exceptionally dry seasons, the subsoil was dried completely out and the rains, though heavy, were unable to penetrate deeply enough to reach the tree roots in poorly-cultivated land.

Injurious insects were particularly prevalent all over the west. The Manitoba maple was, probably, the worst sufferer, being attacked practically everywhere by enormous numbers of aphids, and in southern Manitoba and eastern Saskatchewan by the fall cankerworm, which apparently is rapidly increasing. Both these pests may be fairly well controlled if proper precautions are observed. Spraying, however, of old plantations is an expensive proposition, but while the trees are still young is not such a difficult operation, and it is hoped that such severe attacks will not occur again in the near future. In southwestern Alberta and western Saskatchewan the poplar leaf beetle appears to have been very prevalent and to have caused considerable injury to poplars and willows in the cultivated plantations.

Mention was made in my last report of the desirability of having all land for planting summer-fallowed during the previous season. From continued observations the very much better results in the growth of belts set out on summer-fallow, as compared with other forms of preparation, has been very strikingly demonstrated. The gradual working in and spreading of native grasses and especially brome grass, has been found to be the cause of practically every failure in old established plantations. This working in of grass can nearly always be traced to the original preparation of the soil, which in such cases has usually proved to be backsetting or garden land, or potatoes planted on new lands. No matter how well new land is cultivated it seems practically impossible to entirely eradicate the native grasses. Even if only one or two roots of sweet or couch grass persist these will very soon spread, and

surface cultivation only helps to increase the evil, and in an incredibly short space of time the grass is found growing all through the plantation. For this reason it has now been decided as a definite policy that in future trees will be granted only when the ground has been prepared by a thorough summer-fallow. By following out this policy consistently the danger of grass spreading amongst the trees in later seasons will be practically eliminated, provided, of course, proper precautions are taken to prevent it working in from the edges. This can easily be done by keeping a well cultivated strip of four or five feet in width along the outer edges.

It is interesting to note that the Forest Service of the Federal Department of Agriculture of the United States has now inaugurated a system of tree distribution in their Prairie States practically identical with our co-operative system. Officers of their department were sent here both in 1914 and 1915 to investigate the details of our system, and from a perusal of the regulations which will govern this distribution it will be found that they are exactly similar to ours in all the main features. The growing of the stock and the actual distribution is to be carried on at the field station at Mandan, North Dakota.

An arrangement has been reached with the Provincial Department of Education at Regina with a view to further encourage tree planting on rural school grounds. The importance of this line of work has always been realized by the Forestry Branch, and special efforts have been consistently made in this direction. The general results, however, have not been encouraging and under existing conditions it seemed impossible to make any real headway without the active co-operation of the educational authorities. In dealing with the schools individually the chief difficulty lies in the fact that there is no permanent individual responsibility in preparing for, planting and subsequently looking after the trees. Teachers in the rural districts seldom remain at one school for more than one or two seasons, while the personnel of the school boards frequently changes; so that a teacher or a secretary who is enthusiastic and makes every preparation for planting may be followed by others who show no interest in the development of the belts and consequently the plantations are a failure. This, unfortunately, has been our experience in the great majority of school plantings. Under the new understanding with the Saskatchewan authorities the responsibility for seeing that proper care will be given in cases where trees are granted will rest entirely with the district school inspectors. All applications for school planting will in future be made to the Superintendent of School Agriculture at Regina and not to our office as in the past; and only in cases where the school inspectors are satisfied that proper preparations have been made, and arrangements for planting and caring for the trees provided, are the applications to be passed on to us to be finally dealt with. As considerable pressure can be brought to bear on the local school boards by the provincial authorities it is confidently expected that we may look for very much better results under this arrangement than has been our experience up to the present.

The following tables show in detail the districts covered by each inspector and other statistical information. It will be noticed that approximately 1,700 more applicants are to be furnished with trees in the spring of 1916 than in 1915, and that about 1,019 more names appear on the inspection lists for this summer than in 1915. About 2,400 more applicants were visited in 1915 than in 1914:—

TABLE 1.—Annual Distribution of Deciduous Stock.

	1911	1912	1913	1914	1915	1916
Number of applicants receiving trees....	3,285	3,618	3,536	3,420	3,459	5,210[1]
Seedlings and cuttings distributed.....	2,636,100	2,729,135	3,495,375	3,685,455	3,730,375	4,571,475[2]
Average number per applicant.....	721	626	988	1,077	1,078	877
Number of applicants on inspection list..	8,036	7,375	6,987	7,169	9,570	10,589[1]
Number of new applications received...	2,656	1,649	1,899	1,559	3,693	2,587[2]

[1]Compiled March 15, 1916. Figures will be slightly altered when 1916 lists are completed.
[2]Supplementary to these figures considerable stock will be shipped to the Saskatoon Nursery, Manitoba Education Department and other Public Institutions.

TABLE 2.—Distribution of Trees in Relation to Districts, 1916.

District.	Number men on list.	Number to receive trees.	Number trees allotted.	Average number per applicant.
Central and Southern Manitoba.....	583	296	257,200	877
Central Saskatchewan and G.T.P. East of Saskatoon.....	714	310	274,350	893
Southeastern Saskatchewan.....	1,098	657	578,850	887
Central and Northern Saskatchewan Alberta and Manitoba..	914	493	422,000	865
Southern and Western Alberta.....	1,251	733	649,400	962
Central Alberta.....	1,204	684	602,525	892
Southern and Western Saskatchewan.....	1,386	760	669,100	900
Western Central Saskatchewan.....	1,246	622	543,600	852
Central Saskatchewan.....	1,174	655	574,450	870
Totals.....	9,570	5,210	4,571,475	881

The following is a tabulated statement of the planting plans prepared during the winter and the correspondence handled during the fiscal years 1914-15 and 1915-16:—

	April 1, 1914, to March 31, 1915.	April 1, 1915, to March 31, 1916.
Planting plans prepared.....	2,628	4,441
Pieces of mail received.....	21,353	22,076
[1]Pieces of mail sent out.....	26,856 (inc. 2621 plans franked)	29,536 (inc. 4216 plans franked)
New files added.....	5,967	4,864

[1]This does not include bulletins, these being sent out from the head office at Ottawa.

NURSERY WORK.

The following areas were devoted to the various nursery crops:—

Broad-leaved stock.—Maple seedlings, 29 acres; ash seedlings, 1 year old, 24 acres; ash seedlings, 2 years old, 21 acres; Caragana seedlings, 5 acres; willow cutting stock, 3 acres; Russian poplar seedlings, 4 acres; total, 86 acres.

Coniferous (evergreen) stock.—Transplant plots, 10 acres; seed beds, ¾ of an acre; total, 10¾ acres.

Total of both broad-leaved and coniferous stock 96¾ acres.

Sown in the fall of 1915.—Ash, 21 acres; caragana, 8 acres.

Owing to the scarcity of maple seed it was not thought advisable, on account of the risk of losing seedlings by late spring frosts, to sow any of this variety in the fall, our entire stock which was collected in 1914 being retained for spring sowing.

The following is a list of stock available for distribution this spring (1916):—

Broad-leaved—		
Maple (1-year seedlings)	1,755,000	
Ash (2-year seedlings)	1,128,000	
Russian poplar (cuttings)	129,500	
Willow (cuttings)	372,525	
Caragana (1-year seedlings)	541,000	
		3,926,025
Coniferous (Evergreen)—		
Scotch pine (4-year transplants)	14,157	
Jack pine (4-year transplants)	42,927	
Lodgepole pine (4-year transplants)	26,153	
White spruce (5-year transplants)	163,528	
		246,765
Total stock		4,172,790

Collection of seed.—On account of the late spring frosts practically all tree seeds were a failure. It was impossible anywhere to obtain even small quantities of maple or ash. The following seeds were collected:—

	Pounds.
Caragana (collected on Nursery Station)	400
Scotch pine (collected on Nursery Station), 29½ bushels of cones, seed extracted	24
Jack pine (collected in Prince Albert region), 86 bushels of cones, seed extracted	44
White spruce (collected in Dauphin region), 44¾ bushels of cones, seed extracted	15

The Scotch pine cones were collected on the nursery in a plantation set out in 1906. The seed seems of excellent quality and we hope that in the future we will be able to supply our requirements from this source.

The spruce and jack pine cones were collected on forest reserves. There was, however, very little good seed in the spruce cones.

Seed distribution.—Having no maple or ash seed which could be spared for distribution caragana was the only kind sent out, and of this seed 156 pounds were mailed to various applicants in one-pound packages.

CONIFERS.

In the spring of 1915 we again set out a number of well-grown seedlings of the following varieties in the transplant plots:—

White spruce (5-year transplants)	151,008
Scotch pine	30,036
Jack pine	27,346
Lodgepole pine	36,592
Western larch	2,347
Russian white birch	2,000
Total	249,329

In the spring of 1915 the following numbers of evergreens were sent out under our usual conditions at a nominal cost of $1 per hundred:—

White spruce (5-year transplants)	66,300
Jack pine (4-year transplants)	14,200
Lodgepole pine (4-year transplants)	15,900
Scotch pine (4-year transplants)	28,900
Total	125,300

These were sent out in 588 separate shipments to Manitoba, Saskatchewan and Alberta. In addition to the above, 6,300 evergreens were distributed free of charge to experimental farms and forest reserves, including the Saskatoon nursery station. There is a very greatly increasing demand for this class of stock, and the success that applicants have had with these evergreens during the past three seasons is most encouraging. With but very few exceptions, which can generally be traced to improper handling, failures seldom go higher than 5 per cent to 8 per cent.

Seed beds.—New seed beds were prepared and sown as follows: white spruce, 1,900 square feet; Scotch pine, 650 square feet; jack pine, 780 square feet; lodgepole pine, 300 square feet; total 3,630 square feet.

The spring weather was particularly unfavourable for germination and artificial watering had to be resorted to. This we have never yet found to give satisfactory results and fortunately in average seasons we get plenty of rain in late May and June to ensure good germination. This year I am sorry to say the stands secured were, for the first time in our experience, very much below the average.

The area of the spruce and pine beds has been considerably increased over previous seasons as it is now proposed to commence propagating stock for future planting on some of the smaller reserves. About 2,400 square feet of additional seed beds were sown for this purpose besides the amount above noted.

PERMANENT PLANTATIONS.

Rainfall in this district was very light during the spring and summer months and following 1914, during which the precipitation was also less than average, the plantations did not show as large a growth as usual. The most striking feature of these plantations was the very much better growth of all the evergreen conifers as compared with the broad-leaved varieties, which very clearly demonstrates the adaptability of the former to drier conditions and their general superiority for prairie planting.

A Russian poplar plantation which was set out in pure sand in 1906 and which made a very rapid growth for several years is turning out rather a disappointment. The trees have become very badly affected by a canker or rot which always seems to attack this poplar sooner or later. The disease may have been hastened in this instance by the fact that in two seasons considerable pruning was done in order to secure cuttings. It is thought that the fungus may have gained access to the tissues through the wounds caused by the pruning some years earlier than probably would have been the case had no pruning been done.

The tamarack and European larch plantations did not suffer any injury from the saw-fly as we had secured a power spray pump and went over all the plantations very thoroughly with lead arsenate as soon as the first larvæ were observed after hatching.

The usual measurements were made in the fall of the year in the various plantations. Most of these plantings are still much too young to take anything but height measures and measurements of annual growth. These measurements, however, are interesting in showing the comparative rates of growth of the different varieties during the early stages.

The following table is made up from averages of hundreds of measurements taken annually in the plantations set out on this nursery during and subsequent to 1905:—

AVERAGE HEIGHT GROWTHS ON MEASUREMENTS.

The measurements show the average height of the plants in feet and inches at the end of each year up to the eleventh year since the plantations were set out.

Species.	1	2	3	4	5	6	7	8	9	10	11
	′ ″	′ ″	′ ″	′ ″	′ ″	′ ″	′ ″	′ ″	′ ″	′ ″	′ ″
Tamarack	2 0	3 1	5 8	7 5	8 9	10 4	12 10	14 0	16 0	17 6	19 0
Scotch pine	1 4	1 5	1 10	2 6	3 10	5 5	8 0	9 6	11 0	12 1	15 2
White spruce	1 6	1 7	1 10	2 4	2 8	3 0	5 6	7 2	8 10	10 0	12 0
Maple	2 0	2 4	5 4	8 0	10 1	12 0	13 2	15 0	17 0	18 0	.....
White birch	2 10	4 0	5 9	8 5	10 6	12 4	14 0	15 6	17 0	18 2	.....

GENERAL FARM WORK.

Outside of the general ploughing and cultivation necessary in connection with the nursery proper and permanent plantations, about 22 acres of new land were cleared of scrub, wolf willow and small poplar, and broken and backset.

Twenty-five acres of oats on summer-fallow and 30 acres on spring ploughing were put in to provide grain and straw for the horses.

Thirty acres were under hay (rye grass) and about 6 acres additional were seeded down. Eight or nine acres of this hay land were ploughed up and worked down after the crop was cut.

SASKATOON NURSERY STATION.

Regarding the work at the Saskatoon station, a considerable number of seedlings and cuttings are ready for distribution from this nursery. In order to equalize the distribution work of the two nurseries, and to expedite the shipping, about a million and a quarter of seedlings and cuttings will be shipped from here in bulk to the Saskatoon station for redistribution along the railroad lines radiating east and west from Saskatoon. Several trips were made to the Saskatoon nursery during the season and I was pleased to note that the superintendent, Mr. McLean, has the work well in hand and that the general development is very satisfactory.

It is the intention this season to erect a boarding-house on the nursery for the accommodation of labourers, and I understand that tenders for this building have already been called for.

Considerable inconvenience has been experienced here on account of the water supply having given out, but work is now in progress in boring a test well which it is intended to put down to a depth of 200 feet; and it is hoped to strike a good flow of water, as wells of about this depth in the immediate vicinity are giving good supplies.

PLANTING ON RESERVES.

Several small reserves have been established recently in Saskatchewan covering areas unfit for agricultural development. The soil on most of these reserves is almost pure sand and at present, with the exception of scrub willows and scattered poplar bluffs, is devoid of tree growth. In order to develop these areas it is necessary that

artificial reproduction be resorted to. This, however, is a work of considerable magnitude and will have to be carefully planned before any large planting operations are undertaken. It is, however, the policy of the department to plant up these sandy areas as soon as practically possible, and in order to make a start, about four acres will be set out on each of the following reserves this spring: Elbow, Dundurn and Manito. These plantings will be more or less of an experimental nature, partly to determine the best method of planting and partly to find out which are the best varieties and what aged plants give the best results. On the Spruce Woods reserve in Manitoba, from 15 to 20 acres are to be set out, the stock for this purpose has been grown on the reserve itself. The plants for the other reserves will be shipped from the Indian Head nursery, and in order to develop a supply for future plantings a considerably increased area of seed beds will be prepared and sown each season. The varieties which it is proposed to utilize chiefly are white spruce, native jack pine and Scotch pine, and it is thought that two-year-old seedlings of pine and three-year-old seedlings of spruce are likely to give the best and cheapest results. This supposition is based on trial plantings that were set out on the Spruce Woods reserve in 1903, 1904 and 1905. In these trials several methods of planting were tried and plants from one-, two- and three-year seedlings and transplants were set out. The result from sowing seed and using one-year seedlings was practically a failure. The two-year seedlings gave excellent results when planted in the bottom of plough furrows. These early plantations have made very encouraging growth, many of the trees now being 10 to 11 feet high. The variety used in these plantings was principally Scotch pine.

NORMAN M. ROSS,
Chief of Tree-Planting Division.

APPENDIX No. 2.

The following report concerns the work done in the Manitoba inspection district during the fiscal year 1915-16. This report includes the work on the Duck Mountain, Riding Mountain, Turtle Mountain and Spruce Woods forest reserves, and on the Manitoba South, Manitoba North, Pas and Hudson Bay fire-ranging districts.

SURVEYS.

During the past summer two reconnaissance parties were engaged as indicated below.

Eastern Manitoba Survey.—This party, consisting of Messrs. Aiken and Porteous, covered the country from the Wanipigow river north to the Poplar river and eastward to the Ontario boundary. This area of 5,725 square miles was found to be approximately 25 per cent muskeg, 25 per cent cordwood, poles, etc., and 50 per cent brulé, restocking in places. Jack pine is the chief tree found in this area, occurring on the rocky and sandy ridges which form so large a part of this area. White spruce and poplar are found on the better alluvial soils along the rivers, and black spruce and tamarack in the muskegs. The whole country may be briefly described as rocky ridges separated by muskegs, lakes and streams. Mr. Aiken recommends that the whole of this area be set aside as a forest reserve, being absolute forest land.

The country along the eastern boundary of the province of Manitoba has now been covered from the United States boundary up to township 44 and should be completed to the north end of lake Winnipeg as soon as possible.

Central Manitoba Survey.—The area covered by Messrs. Maimann and Webb includes that stretch of country between lake Winnipeg and lake Winnipegosis from lake St. Martin northward to Grand Rapids. Of this area of 5,400 square miles it was recommended that 75 per cent be set aside as a forest reserve. This area is approximately 25 per cent timber, cordwood, etc., and 50 per cent muskeg, the remainder being brulé, lakes, brushland, cut-over lands, etc. The chief difference between this area and that to the east of lake Winnipeg is that this area has about double the amount of muskeg, and the predominating rock outcrop east of the lake is replaced here to a large extent by sand and gravel ridges. There are several areas described where grazing could be profitably carried on around Pickerel and Waterhen lakes. The area recommended for a reserve is that portion from township 34 northward to Grand Rapids, the part west of Waterhen lake not being included. Since this area has not the outstanding features of absolute forest soil that typical Laurentian country has, and also since the reconnaissance had to be wholesale to cover the country, a more detailed survey is to be made of the southern and western parts, the characteristics of which are more similar to those of an agricultural soil than the remainder of the area.

FIRES.

The past fire season has probably been the worst for a good many years in this province. The dry fall of 1914, with little snow in the winter, and a very dry spring with practically no rain until June made the whole country a veritable fire-trap. Even though we did have a number of fires, considering that the season was so dangerous, they were kept fairly well under control.

There is one source of fires which we are endeavouring to overcome and which will have to be controlled in the near future, that is fires crossing the reserve boundaries from outside. This is due primarily to the inefficient control of fires outside the reserves, which is in the hands of the municipalities, and secondly to the fact that our reserve boundaries are not cut out so well as they should be. We are constantly improving our boundaries and in a year or so will have them completed.

The Manitoba Fire Act, section 5, reads: "Any person who, wilfully or through gross carelessness, allows fire to run from his own land to that of another is liable, etc. . . . . ." It is not very difficult to secure a conviction against a man for carelessness, but "gross carelessness" is considerably different and it is a difficult matter to get a conviction. In spite of this, however, we secured three convictions, the fines being $20 and costs, on the Riding Mountain reserve last year and as the cases were published in several newspapers these convictions had considerable effect. It is also proposed to secure the co-operation of the municipal fire guardians, the appointment of whom has just been made compulsory by the Provincial Government.

If there continue to be as many fires from unknown causes, the majority of which are very difficult to trace, there will probably have to be some check kept on all persons entering the forest reserves. This might be in the shape of a free permit, a register to be signed, or a form to be filled out giving information about the intended trip. By some means similar to this it could be determined at any time who were on the reserves.

Duck Mountain Reserve.—The worst fire on this reserve last year was the "T. B. Fire," the cause of which was not determined although there were indications that it was incendiarism. The chief damage was to the timber within berth 986, the property of the Burrows Lumber Co. This timber was killed but not destroyed and was taken out by the owners during the past winter so it was only a partial loss.

There were also a considerable number of fires which were attributed to settlers and unknown causes.

Riding Mountain Forest Reserve.—The fire situation on this reserve last year was as critical as that on the Duck Mountain reserve. The chief causes were settlers and those classed as "unknown." I am safe in saying that the indications are that some of these were set intentionally to secure pay for extinguishing them and also to secure dry wood. It was on this reserve that three convictions were secured and I understand that practically all the people bordering on the south part of the reserve have heard of this, and that it has had considerable effect.

The "Whirlpool Fire" was the worst fire on this reserve and, I regret to say, was not handled by the ranger as well as it should have been. This fire came across the boundary, near the Whirlpool river, and worked northward, covering about 30 square miles. The largest part of this, however, was poplar scrub with considerable open land, so that although the damage to young poplar and spruce was considerable, the loss was not so great as if it had been merchantable timber.

At the northwest corner of the reserve there were three fires which killed over 200,000 feet board measure of spruce, but this was practically all removed on permits during the past winter so that it was not a complete loss.

Turtle Mountain Forest Reserve.—Although there were 10 fires on this reserve last year we were fortunate in keeping them well in hand, so that little damage was done. The greatest damage in any one fire was $132 and this only burned over 100 acres, the majority of which was grass land. A conviction on a charge of carelessness was secured and the accused fined $20 and costs. Under this charge of carelessness there should have been more convictions secured, but sufficient evidence could not be obtained.

The largest fire which occurred was on the west end of the reserve and this burned over 5,000 acres of grass lands. This was the hardest fire to fight, and indications were that it was intentionally set as a considerable number of small fires started in this vicinity where there was no reason for them.

The lookout tower near headquarters proves very useful as almost the whole of the reserve is plainly visible from it; and during the past season it was frequently used to locate fires.

Spruce Woods Forest Reserve.—There were ten small and ten large fires on this reserve, most of which did little damage. The one fire which was very difficult to fight was in the peat soil on a hay meadow. The cause of the fire was uncertain, but probably was due to a fire which had remained dormant in the peat from June 1 to August 15. Although the ranger passed this place several times it was smoldering so slowly that it was not noticeable until August 15 when it broke out and began to travel on the surface. It burned as deep as 3 to 4 feet into the ground in many places and before it was stopped had covered about 150 acres. The fire was finally stopped by trenching around it and building a dam on Pine creek which forced the water to run through the ditches and on to the fire, which was thus extinguished.

IMPROVEMENTS.

Riding Mountain Forest Reserve.—During the past year about 75 miles of roads have been constructed. About 40 miles of this followed the route of the old Thompson road and the Whirlpool road, which in some places was merely a trail; the remainder was new. The Thompson road was cut out about 15 years ago and since then the fire had run over part of the country, and the dead timber, falling, had completely blocked and in most places obliterated all signs of a road. The Kelwood-Whirlpool road, which is the eastern end of the Central road, was also completed. There were also minor improvements made on other roads, especially the grading on the Strathclair road at lake Audy and the building of a short branch road to the Whirlpool lookout tower.

The system of roads adopted for this reserve is the Central road, running east and west through the reserve from Roblin to Kelwood, and several roads running at right angles, as the Thompson, Strathclair, Birdtail and Gilbert Plains roads. Then there are, and will be, more branch roads opening up special parts of the reserve.

Forty miles of fireguards were cut within the past year. These were cut from 16 to 20 feet wide and the brush piled for burning and a part of it burned. There is still a considerable part of this reserve to protect with fireguard, and this is being done as fast as the appropriation will permit.

The chief telephone work carried on was the construction of the Dauphin line, a branch from the Central line 30 miles north, to the Dauphin ranger station. The poles were cut and distributed the winter before. The method of construction is very close to the standard of the United States Forest Service for a grounded circuit line. The other work carried on was repairing the present lines and cutting poles to make a pole line of the Kelwood-Whirlpool branch. The cost of telephone construction is increasing rapidly as the cost of wire has risen over 60 per cent in the last year, which has added $8 per mile to the cost of construction.

There were four cabins and stables erected during the past year to serve as stopping places, tool caches, etc. There are still two more of these to erect, after which it will not be necessary to carry a tent when travelling on this reserve.

There were two steel lookout towers purchased, one for the Russell district and one for the Whirlpool. The tower at the Whirlpool controls about ten townships and will no doubt prove very valuable in detecting fires over this area.

Duck Mountain Forest Reserve.—During the past season a decided start was made in the construction of substantial roads and telephone lines to open up the reserve. The primary part of this plan is the Central road and telephone line running north and south from Grandview to Minitonas ranger station and a road and telephone line running east and west across the reserve from the proposed Pine River ranger station site to the Kamsack ranger station at Madge lake. The secondary trails and telephone lines will then be branches from this primary system.

The Central road was built for 31 miles north from Baldy mountain. This will be produced north to the Minitonas ranger station during the present summer. The other piece was built from the eastern boundary west to Singush lake, 9½ miles. This totals about 41 miles of primary road, all of which can be travelled over by automobile after being used for a season. There were also 12 miles of secondary road built, as well as about 4 miles of pack trail which will probably be opened up as a road later on. Considerable improvement was made to existing roads. The 8 miles of fireguard on the eastern boundary was cut a rod wide and is very satisfactory.

The central telephone line, of which 27 miles were built, runs northward along the Central road. On this line green trees were topped and used for poles for the southern 6 miles; the remainder being an all-pole line. The Singush line, 9½ miles along the Singush road, is an all-pole line. Both lines are grounded circuit and are very satisfactory.

On the Central road northwest of Singush lake, the Central cache and stable were built at the end of the season. This cache is to be used to store fire-fighting tools, supplies, etc., and as a stopping place between ranger stations.

The improvements made during the past year on this reserve were well constructed and are very satisfactory, and when the plan now laid out to include roads, trails, telephone lines, ranger stations, cabins, fire lines and lookout towers, is completed the fire danger on this reserve will be materially lessened.

Turtle Mountain Forest Reserve.—On this reserve practically all fire lines act as roads and vice versa. The practice has been to clear the fire lines 40 feet wide and

plough 24 feet of this; and, in the case of roads, to clear about 30 feet and plough about 12 feet, after which it is levelled with a disc and drag.

Twelve miles of new fire line and thirteen miles of road were cleared and ploughed. There still remain about twenty miles of fire line to clear around the boundary, and the fireguards in the interior will be cut so as to connect the numerous small lakes. Six miles of the north boundary fire line were widened.

The West Cabin, which is in reality a ranger station, was built during the past year.

The mainland dock was built to house the launch and for a landing place for small boats.

Spruce Woods Forest Reserve.—The only new construction undertaken was the ploughing of a fireguard south of the Military Camp at Sewell, to protect the reserve from fire. On a part of this six miles there was considerable brush to cut, the whole distance being ploughed one rod wide. The Scotch pine plantation was surrounded with a fence and the fireguard re-ploughed. The only other improvement work done on this reserve was the planting of shelter-belts of evergreens at Shilo headquarters and Brandon Junction cabin.

SILVICULTURE.

Riding Mountain Forest Reserve.—The number of timber permits issued on this reserve dropped off about 20 per cent, or from 750 to 606. Of these about 40 per cent were for fire-killed timber and the remainder for green timber. This reduction in permits is thought to be due partly to the effect of the war and partly owing to the hard winter.

Considering that this was the first year a very determined effort was made to secure proper brush disposal, a very good job was made. The permittees not being used to disposing of brush, as in most cases where a new idea is first tried, it took a considerable amount of time and patience to get them to do the work thoroughly. I was pleased to hear at the end of the season that several of the permittees had admitted that the proper disposal of brush is advantageous. The brush from green spruce was piled and burned in most cases as the cutting proceeded, while other brush was lopped and scattered.

There were no timber sales in operation, and only one mill-site which was let to an operator who was cutting on settlers permits and who complied with the regulations satisfactorily.

Duck Mountain Forest Reserve.—During the past year the timber permit work has been much more satisfactory on this reserve than during the preceding year or so, the majority of the brush being properly disposed of and stumps cut low.

The most satisfactory method of burning spruce brush, which was the prevailing species cut, was to build a small fire while "swamping" and throw the brush on to this, and so clean it all up as the work progressed and not have to come back later to burn brush. The cost by this method is estimated to be from 30 cents to 50 cents per thousand feet board measure.

There was only one mill operating, which was in the Durban district and at which about 300,000 feet was cut to fill permits.

With our success this year it is expected that we will have less trouble in the future with regard to brush disposal and other regulations.

Turtle Mountain Forest Reserve.—The great depth of snow affected the taking out of wood on this reserve more than on any other, the number of free permits being only 23 or a falling off of 70 per cent, while the paid permits fell from 26 to 5, over

80 per cent. The cordwood removed was all dead timber and only a small quantity was taken. As the supply of green timber is limited on this reserve it is advisable to confine the cutting to dry timber for a time.

Spruce Woods Forest Reserve.—Due to the severe winter there were only fifteen permits issued during the past season. This is only one-third of the previous year's issue. The only timber taken out here is dead timber, the large percentage of which is poplar. The small trees cut are thrown on to the sleigh or wagon, limbs and all, so there is no trouble about brush disposal.

Shilo Nursery.—The soil on the reserve has, after trial for several years, been found unsuitable for nursery purposes and it is considered advisable, after the transplants now growing have been set out, to discontinue this nursery and obtain the necessary stock from the Indian Head nursery station where, it is understood, arrangements are being made for growing a supply.

GRAZING.

The revenue received from grazing in 1915 was $1,400.75, of which $143 came from Riding Mountain reserve, $506 from Spruce Woods and $760.75 from Turtle Mountain, the latter increasing to this amount from $432.25 in 1914.

Turtle Mountain Forest Reserve.—The grazing on this reserve during the past season has become better known to the people and many more of the farmers have availed themselves of the opportunity of having their stock pastured for the reasonable sum of $1 per year. There has been an increase of over 40 per cent over the revenue from last year which brings the total this year to $760.75.

This brings the total number of stock this year up to 544 cattle and 126 horses in the enclosure and 246 cattle in the open grazing. During the past year only the north part of the enclosure was used but as the number increases both parts will be used. As there are over 23,000 acres in the enclosure it is not more than one-third stocked as yet and will pasture all the stock which will be available for some time. During the past season the grass, although not as heavy as in some years, was very plentiful on account of the enclosure being very much under-stocked. This, together with the fact that the flies were not as numerous as usual, made a very favourable season for the stock in the enclosure which were in fine condition during the summer and also when taken out in the fall.

The cattle in the open grazing area did not do as well as the others which is probably due to the fact that the corral into which they were put at nights, to prevent their being lost, was very small (about 15 acres), and consequently was soon cleared of all forage. During the coming summer either a larger corral will have to be built or the cattle will have to be allowed out at night.

Spruce Woods Forest Reserve.—The grazing enclosure at Brandon Junction, although only completed a year ago, has become so well known and so popular that during the past season there were 500 head of stock pastured.

During the early part of the season the stock did very well but later on, in August and September, they did not continue to improve but rather went back. This was no doubt due to the rather poor watering facilities. Arrangements have been made to improve the watering facilities by erecting a pumping windmill with storage tank which, together with the present plant, will furnish an ample supply of water for the stock. In addition to the enclosed grazing there were also 53 head of stock taken in for the open grazing on the east end of the reserve.

Riding Mountain Forest Reserve.—This reserve can, no doubt, support a much larger number of stock than the Turtle Mountain reserve, but it has not been adver-

tised or brought to the notice of the public as much as the latter. Then, the country around the Turtle mountain has been settled longer and the farmers have gone in for stock-raising to some extent.

The chief areas of grazing land on the Riding mountain are in the vicinity of Clear lake, lake Audy, in the Birdtail valley and (in the west end) near the Roblin ranger station. From the information on hand the whole reserve will probably support in the neighbourhood of 10,000 head. During the past season about 400 head were grazed in the vicinity of Clear lake. This is the second largest area of continuous grazing land in the reserve, the other being in the Birdtail valley where about 80 head of stock were pastured last year. These two areas should support about 3,000 head each.

During the present season it is the intention to make a special study of the grazing facilities on this reserve to determine more definitely the number of stock which can be supported there, and also to take up the numerous other problems regarding grazing.

Duck Mountain Forest Reserve.—There has been practically no grazing on this reserve up to the present and the possibilities are not as great as on other reserves. There are several areas, however, where a considerable number of stock can be pastured, the chief of these being near Singush lake, Shell river and Boggy river and at the Durban ranger station. In all about 2,000 head can be grazed on this reserve.

USES OF LAND.

Summer Resorts.—During the past year there have not been as many summer resort lots applied for as was anticipated earlier in the season. In the case of Clear lake and lake Max this was largely on account of the financial stringency caused by the war.

The number of lots leased on the several resorts up to the end of the fiscal year 1914-15 was: Madge lake, 7; Clear lake, 2; and Max lake, 18. During the fiscal year 1915-16 there were leased at Madge lake 20 additional lots and at Max lake 4.

Madge Lake Summer Resort.—From the above it will be seen that the greatest activity in the leasing of lots was at this resort, and had there been more lots surveyed with a water frontage the number taken would have been considerably greater. As there are over fifteen miles of shore line this difficulty should be easily overcome. The practice of cutting out a road along the front of the lots greatly impairs the value of the lots. This road should be staked out as it is required by law, but it need not be cut out, and access to the lot could be obtained by a road cut out at the rear of the lots which would enable the lessee to improve his lot to suit himself, with, of course, the understanding that the roadway would not be occupied by buildings.

Clear Lake Summer Resort.—During the past year there have been no applications for lots at this resort. This is due to the war and probably to the location of the summer resort, which is on open prairie land. A more suitable location is being considered.

Max Lake Summer Resort.—During the past year only two lots have been applied for, though more applications will be made if the unsurveyed shore west of headquarters is surveyed. This is a fine location for lots and a considerable number of people wish to secure these rather than on the Island, to which access can be obtained only by boat. Although there are only 22 lots leased, this should not be taken as a criterion of the popularity of the resort. During the past summer all those having lots occupied them for the greater part of the season, and on Sundays and holidays there were always several hundred people at the lake.

Hay Permits.—As in past years there has been a considerable business carried on in hay permits but, due to the very poor crop, it was difficult to secure sufficient hay to cover all permits. One feature of this, which is being taken in hand, is the burning of hay meadows by settlers who expect to cut the hay on the same. These meadows will be burned off under the supervision of the rangers early in the spring, and it is expected this will prevent a large number of fires.

Military Camp.—On the Spruce Woods forest reserve, adjacent to the Military Camp at Sewell, the military authorities have fenced in several square miles of the muskeg which is in the rear of the targets and which is used for rifle and artillery practice. They have also been granted the use of the whole western part of the reserve on which to train, and it is expected that this will be used during the coming season as there will be a large number of soldiers in training.

Muskrat Ranch.—There has been an application for a muskrat ranch to cover an area near the west end of Clear lake, on the Riding Mountain reserve. This area, consisting of about 300 acres, has been surveyed and an agreement drawn up which to date has not been closed. The idea of the lessee is to fence in a small slough-lake and raise muskrats for their skins.

Hunting Cabins.—The matter of issuing permits for hunting cabins was taken up on the Riding Mountain reserve, which is much more popular than any other during the hunting season, and over 75 permits were issued for locations for cabins at 25 cents each, and the timber used in their construction charged for at the regular rate of dues, the average on each of these cabins being about $5.

TRESPASS.

There were a few small seizures of timber cut in trespass by settlers. The only trespass of any account was made in February, 1914, by the Burrows Lumber Company. The timber cut was green spruce and was cut outside the boundaries of T. B. 986 and T. B. 1120. This case is in process of adjustment.

FISH AND GAME.

During the past summer the perch which were put into Max lake a few years ago began to take the hook, and were caught in large numbers by the hundreds of campers and visitors to the lake. Although these fish are not classed with the more "gamey" fish such as trout and bass, still they furnish an immense amount of sport for all who wish to fish for them. This is the first year that any number have been caught and since they could be caught all over the lake, and in great numbers, it is very likely that they are now very numerous and that there is no danger of them being fished out. So far no pickerel have been caught in Madge lake, but it is expected that during the next year or so they will have multiplied and grown large enough to be caught.

The Riding Mountain reserve is more popular than the Duck Mountain reserve during the big game shooting season. Besides the people who had hunting cabins, for which permits were issued on the Riding mountain, there were a great many who lived in tents, so that the total number who hunted big game, consisting of elk or moose on this reserve, it is estimated would be well over 500. The administration of the game is in the hands of the Provincial Government.

PUBLICITY.

During the week of July 1 to 8 there was held in Winnipeg an exhibition for patriotic purposes, which included an industrial parade. A forestry float was prepared

for this and consisted of specimens of wood taken from the exhibit here, and also wood products as a bale of excelsior, miniature cord of wood, sections of railway ties, window frames, barrels, etc. All these were artistically arranged with evergreen on a platform built on a large freight lorry. Across the top of the float was a large banner on which was printed "Dominion Forestry Branch". After the parade this was placed in a tent at the exhibition grounds and one of the officers of the Forestry Branch was there to explain to the visitors the aim and purpose of the forestry organization. There were also a number of forestry bulletins, etc., distributed from here. While there were a large number of people in town during this patriotic week we had about 500 cards artistically printed with a few catchy remarks regarding fire protection. These were placed in the dining rooms of the leading hotels and in other places where they would be seen by the public, and attracted considerable attention.

During the year the exhibit of Manitoba woods at the Industrial Bureau has been of interest to numerous visitors.

The practice of having forestry articles in the newspapers will have considerable effect in educating people in the work which the Forestry Branch is doing and this publicity should be encouraged as much as possible.

FIRE-RANGING.

The fire-ranging work outside of the forest reserves was divided among four districts as follows:—

Manitoba South District.—The Manitoba South fire-ranging district was under the control of Chief Fire Ranger A. M. McLeod, a staff of twelve rangers and two assistants. For a portion of the months of May and June two temporary rangers were employed in the lake Winnipegosis district. The staff on the whole was not by any means satisfactory, only about half of the rangers on the staff could be termed good fire rangers. More precaution should be taken in the selecting of good rangers as this is the most important point of the service.

The patrols were made both by canoe and on foot, the lake Winnipeg patrols being made by canoe, and in one district a large skiff, equipped with a sail, was used and proved very advantageous.

On account of the shortage of snow in the winter of 1914-15, and very little rain in the early spring, the country on the whole was very dry and the fire danger very grave at all times during the season, particularly the first three months.

In all we had nineteen large fires and seventy-five small fires, covering a total area of about 170 square miles, which is about eight-tenths of one per cent of the area under patrol. The cost of fighting fires was larger than in previous seasons on account of two fires on lake Winnipegosis, where an expenditure of over $2,000 was made. This was largely due to the fact that there were no patrols on the lake, and the fire had made great progress before men could be taken to the scene. Apart from this expenditure the cost of fire-fighting was normal, being in the neighbourhood of $700, which is most satisfactory, considering the weather conditions. The timber destroyed was principally young growth, there being very little merchantable timber killed. Some 2,000 acres were damaged, but not killed; the fire also ran over some 20,000 acres of old brulé, slash, grass land, etc.

On the whole the season could be termed fair, when one takes into consideration the weather and also the class of rangers we had in some districts. A patrol will be made of lake Winnipegosis which will look after that country, which has not previously been properly provided for. We should also have a steam tug on the lake Winnipeg patrol which would ensure us better protection as the present system of canoeing is very slow, and a fire could make too much headway before a ranger could get to it.

Manitoba North District.—This district has been for some time under the charge of Mr. J. T. Blackford, Chief Fire Ranger, with headquarters at Forestry island, near Norway House, and the patrol work, with the exception of Split lake, performed by Indians who were engaged locally and who had an intimate knowledge of the districts to which they were assigned. These men worked in pairs, making the trips by canoe, which took from a week to ten days.

Mr. Blackford had a power canoe, furnished him in 1914, for use in the waters accessible without portaging, and found it very serviceable. He made inspections of the outlying districts as frequently as circumstances would permit, accompanying me on one trip to Split lake. At Split lake a white man was appointed as ranger, but it was found that since the advance of the Hudson Bay railway the district could be managed to better advantage from Pas, and it was therefore transferred and Mr. Blackford was asked to take charge of the territory farther east than he had heretofore covered in lieu thereof.

The work in this district has been most satisfactory and while some drawbacks attend the employment of Indian rangers, it is not possible at the present time to engage white men. An improvement is looked for this season as the result of a special effort to secure the co-operation of the Indian chiefs of the district.

Pas District.—A number of fires occurred in this district but all, with one exception, were dealt with promptly. Rangers in this district were each provided with a helper and proved reliable officers. The patrols in this district are all made in canoes, except that covered by the chief ranger who operates the motor boat supplied two years ago. While this boat was most suitable at the time, it has, since the advance of the Hudson Bay railway provided a means of access to the north, proved rather large and expensive, and a smaller craft being thought now more satisfactory, if conditions are favourable, the boat will be transferred to lake Winnipegosis next year and a cheaper, smaller boat installed for the Saskatchewan river and tributary waters.

The season, especially in the early part, was most dangerous on account of dry weather with high winds, following a winter with light snowfall. The result was that the whole country was as dry as tinder and lent itself readily to what, we have reason to believe, was a pre-concerted action on the part of numerous unemployed who wished to obtain work. Rain, although delayed for some time, finally came and extinguished all fires. At least two of the fires were the result of camp fires left burning in the winter which, smouldering in the deep moss under the snow, broke out in the spring.

Hudson Bay District.—During the past summer there were a number of complaints regarding fires in the neighbourhood of Port Nelson but it has been impossible to secure any definite reports as to the damage done. From what I can learn little or no merchantable timber was destroyed but the destruction of cover for fur-bearing animals was serious.

During the past winter I made a trip to Port Nelson, travelling from Manitou rapids by dog train, and looked into the work done during the past year, at the same time making arrangements for this season's work. It is hoped that the two rangers selected, who have been highly recommended by the government officials there, will pay attention to their work and render good service. These rangers have been assigned to canoe patrols on the Hayes and Nelson rivers and their tributaries to a distance of 50 to 100 miles from port Nelson.

F. K. HERCHMER,
District Inspector of Forest Reserves for Manitoba.

APPENDIX No. 3.

The following report concerns the Saskatchewan inspection district for the fiscal year 1915-16.

INTRODUCTION.

The greater portion of activities in this district were confined to the administration and field work on the fifteen forest reserves now established in this province, comprising some 6,579,974 acres. General supervision was given to the fire-ranging in the Prince Albert and Battleford fire-ranging districts, which cover most of the unsettled territory outside of the forest reserves between the North Saskatchewan and Churchill rivers. For the greater part of the season 1915 the majority of the staff were busily engaged in fire preventive work due to the early opening of the season and the dry condition of the north country during most of the summer. More time and money were expended on this branch of the work than during an average year.

The organization of the personnel on several of the reserves required considerable attention and adjustment.

The erection and completion of numerous ranger stations was successfully carried on and suitable living quarters thus furnished for many of the staff at convenient points in their districts. The greater portion of the living quarters for the men have now been completed and several of them connected with telephone lines. Road and trail construction was proceeded with and lookout towers were erected. Closer supervision of timber cutting operations was given than ever before and very satisfactory results obtained in brush disposal by permittees and on timber sales.

IMPROVEMENTS.

The improvements carried on during the fiscal year on the various reserves comprised the following:—

Porcupine and Pasquia Reserve.—The most noteworthy building project completed during the past season in the district is that of the headquarters on the Porcupine forest reserve. Very comfortable and convenient buildings were erected, all built of logs but finished with lumber. Four ranger cabins and five stables were constructed. Lumber and materials were purchased for one cabin and stable to be erected this spring.

On the Pasquia forest reserve two ranger cabins and two stables were completed and two new ones constructed. Material was bought and hauled for another one to be completed this spring.

Only slight improvement work was put on existing roads in order to make them passable: the same rule applied to trail work, which consisted mostly of ranger services and some new location. Fireguards were ploughed around the headquarters buildings and the Swan ranger station. Material was purchased and distributed for a telephone line sixty miles long between the headquarters and Hudson Bay Junction; this line to be constructed during the coming season. Four wooden lookout towers have been built and three are under construction. Most of these are from forty to sixty feet in height and are located in the vicinity of the ranger stations.

Big River Forest Reserve.—Two ranger cabins and barns were built in addition to the two stations already completed. A granary was built at Otter cabin. Fifteen

miles of new road were cut, 25 feet wide. Ranger time was spent on improvement to some of the existing roads. A new trail was cut and opened up for some twenty miles. Pasture fences were built at two of the ranger stations and one eighty-foot steel look-out tower was purchased to be erected this spring.

Sturgeon Forest Reserve.—Two ranger cabins and stables were built and completed. Two-and-a-half miles of new road were cut 15 feet wide, and considerable ranger time was spent on clearing out existing roads and trails. Three small bridges were built by ranger labour and two wooden lookout towers erected. Material was bought and distributed for forty-five miles of telephone line to connect three of the ranger stations.

Fort à la Corne Forest Reserve.—One ranger cabin and stable were constructed. Four other buildings were completed. Forty-four miles of road were cut and opened up along an old trail. Two eighty-foot steel lookout towers were erected and one fifty-foot wooden tower. One well was dug and a pasture fence erected.

Moose Mountain Forest Reserve.—One teamster's cabin was built. Two miles of road were cut and twelve miles of trail, along which a telephone line is now under construction. Six miles of telephone line were completed, giving the headquarters connection with rural and long distance lines around the boundary outside the reserve. Two eighty-foot steel lookout towers were erected at the beginning of the fire season.

Beaver Hills Forest Reserve.—Fourteen miles of new fireguard were ploughed and four miles of old guard were re-ploughed. One eighty-foot steel lookout tower was erected at the headquarters. Two small bridges were built and maintenance work on the roads was done by ranger labour. Seven and a half miles of telephone line were completed. This line gives the ranger connection with a rural line outside the reserve, post office, telegraph office, etc.

Pines Forest Reserve.—A new stable was built and the ranger house repaired. Four small corduroys of a few hundred yards were well constructed. About one mile of fireguard was cut out and thirteen miles were ploughed. A new telephone line, nine and a half miles long, was extended from the existing line by running the wires on the railway telegraph poles, after an agreement had been reached with the railway company. This line gives connection between one of the ranger stations and the headquarters. Another eighty-foot steel lookout tower was erected on this reserve.

General.—On the Manito and Elbow forest reserves ranger houses have been constructed according to standard plans for this type of building. Material was purchased for the same class of buildings on the Dundurn and Keppel forest reserves and is on the ground, and they will be built this coming season.

Eighty-foot steel lookout towers were purchased to be erected at the ranger headquarters on the Dundurn and Elbow reserves.

Fireguard maintenance, brush disposal and the construction of pasture fences at the ranger stations were successfully carried on by the staff of the Nisbet forest reserve. This along with close supervison of the wood-cutting operations and fire prevention occupied the most of the time.

Now that most of the reserves have been provided with comfortable living quarters for the staff the next essential for the proper administration of the different reserves is telephone connection between the different stations, improvement of the roads and trails and the erection of more lookout towers. Close supervision of all improvement projects is necessary in order to obtain satisfactory results and the relation of each project to the general plan must be well considered before definite action is taken or money expended.

EQUIPMENT.

Fire-fighting tools such as shovels, spades, hoes, rakes, axes, mattocks, torches, etc., have been furnished to the different ranger stations. Ploughs, brush-mowers, hay-rakes, wagons, sleighs and road scrapers have been purchased for improvement work. Four teams of horses were purchased for work on general improvements and roads. A number of the ranger stations were supplied with sets of carpenter's tools required for the erection of buildings and repair work. Telephone equipment was supplied to the different reserves and a food supply cache was placed in one of the isolated ranger stations for the use of a crew in case of fire. It is most essential that a sufficient number of tools be accessible within a short distance of the fire if efficient work is expected of the ranger and the crew he calls together. The distribution of tool caches in several places in each ranger district should be considered.

FIRE.

The season of 1915 proved to be the most disastrous of late years, due to the dry condition of the country the previous fall and the small amount of snow during the winter which disappeared early in the month of April. This was not followed by any precipitation for several weeks. Most of the sloughs, muskegs and small watercourses were dried up and, as no rain of any account fell during the month of May, the condition in the woods became very serious. Slight, misty showers passed over but they were of very little benefit, merely checking the progress of some of the fires and not extinguishing them. Fires smouldered in some of the muskegs for most of the summer.

The most serious fires took place in the vicinity of the Porcupine and Pasquia forest reserves, most of them being due to the carelessness of transient labourers en route to Pas for work on the Hudson Bay railway. Most of these men travelled along the railway right of way on foot and left camp-fires burning and set fires in many places. However, settlers were responsible to a considerable extent for the setting out of fires to clear their land and not taking the proper fireguarding precautions. A few large fires were reported in the northern part of the province but ran over mostly scrub country, old burns or muskeg and apparently the damage was not extensive. On account of their inaccessibility, remoteness of the region in which they occurred and the difficulty in getting men to fight them, the natural fireguards were their only check.

A disastrous fire occurred on the Sturgeon forest reserve and along its eastern boundary and although it destroyed very little merchantable timber the reproduction which was killed throughout was considerable. This fire spread very fast in the old logging slash which had been cut several years previous. If the brush had been disposed of in some suitable manner, either by piling or burning, the progress of the fire could have been checked much sooner.

The Beaver Hills forest reserve received a bad scorching of nearly its entire area. In the long grass, which had accumulated for a number of years, the prairie fires from the outside spread very rapidly, fanned by strong winds and coming in at several different points at one time. Not much timber was destroyed but considerable young poplar was fire-killed. An increase in the number of cattle grazing on this reserve is the most practical fire protection that can be secured.

On the forest reserves in this district during the year we had 67 large fires and 39 small fires, a total of 106, and a total area burned over of 228,163 acres. The size of the average fire was about 2,000 acres and cost $210 to extinguish, doing a damage of approximately $7,000. Thirty-four acres per thousand were burned over of the forest reserve area. These fires are attributed to the following causes: Unknown, 33 per cent; settlers, 32 per cent; campers, 20 per cent; railways, 10 per cent; lightning, 3 per cent; log drivers, 2 per cent.

Outside of the forest reserves in the fire ranging districts there were 37 large fires and 104 small fires reported. Bad fires occurred in the vicinity of Montreal lake and Ile à la Crosse, though the staff prevented any very great damage to standing green timber. A new patrol boat was built for service on the Saskatchewan river in the vicinity of Cumberland lake during the coming season. More supervision of fire rangers is essential and for the approaching season three sub-chiefs have been appointed, and each fire ranger with a canoe patrol is furnished with an assistant. Bordering the settlement and in country where roads and trails are available the rangers are required to use a horse on their patrols. New canoes have been purchased for the men in the north.

During the past season the lack of brush disposal by both large and small operators in the province has proved to be a very great menace to the remaining merchantable timber and also to the young stands. If it had not been for the large amount of débris in which many of the fires secured their headway such great effort would not have been required to check them. It is almost impossible to check a large fire in an old slashing when it is fanned by a strong wind. If the brush had been burned or even piled it would have left the old log roads or skid roads in many of the old logging operations as fireguards or points of vantage for fire-fighting crews to work from. The condition of these old cuttings with the brush scattered indiscriminately all over the area causes the flames to spread so fast that it is almost beyond human endeavour to check them.

SILVICULTURE.

The results obtained from the enforcing of the brush-burning regulations have been satisfactory. Some difficulty was experienced by the rangers at first. If a little demonstration is made of the proper method and the improvement thus secured is pointed out to the permittee, if he is at all reasonable he can see the advantage. Good results were obtained in the greater part of the settlers' permit cutting and likewise on the timber sale operations. It is most essential that the brush-burning be proceeded with immediately the trees are cut, for if the material is left for a few days in the winter it becomes covered with snow and the operation is thus made more expensive. The inconsistency of the different departmental regulations is very apparent on some of the reserves where the settler is required by forest reserve regulations to burn and dispose of his brush while alongside of him on Dominion lands or a timber berth, over which Forestry Branch officers have no jurisdiction, another man, possibly the settler's neighbour, may be slashing away with no regard to the height of his stumps or waste material and leaving his brush scattered in every direction. The forest officers have been confronted with just this situation numerous times, while they are doing all in their power to reduce the fire hazard and improve the condition of the forest. It is discouraging to the rangers who have a proper appreciation of their duty and very unsettling to the public. Naturally the permittees follow the lines of least resistance and thus are creating year after year a great fire hazard along the boundary of the reserves as well as wasting and destroying more timber than they utilize. There is no attraction in a timber proposition on the forest reserve so long as such slack conditions exist outside; and the utilization of much mature and decaying timber is delayed while a large number of young, immature stands are being cut and a large percentage of the material wasted.

One timber sale on the Fort à la Corne forest reserve is worthy of note for close utilization. This operator has been cutting infected and burned jack pine, with 20 per cent of his logs running under 4 inches at the top and from this material he has been able to manufacture at least 2 x 4 studding. The tops from the former year's cutting and those which were too crooked to be utilized for lumber were sawn into shingles during the summer. This operator cut low stumps and made excellent disposal of brush by burning.

The extension of the time limit for a homesteader to obtain his free allowance greatly increased the demand for timber along the south boundary of the Porcupine forest reserve and a large number of logs were cut and sawn in this vicinity during the past winter. On the whole the demand for cordwood has not been as brisk as in previous years. Close supervision of timber sales and permittees' cuttings by the rangers is the only proper method to pursue to obtain good results, have the brush properly disposed of, waste prevented and trespass eliminated.

On the Pines forest reserve the nursery has produced some two thousand seedlings of Scotch pine, lodgepole pine and jack pine, as well as Norway spruce and white spruce, European larch and several other species. Severe frost during the summer killed off a considerable number, but some 6,500 seedlings were successfully transplanted. The most hardy of the species have proved to be the Scotch pine, rigid pine, yellow pine, lodgepole pine and white spruce. A bed of white cedar has progressed very well. Some 15,000 three-year-old seedlings are ready to transplant on some of the old "burns" this spring, around the headquarters.

Around the ranger stations on the Beaver Hills, Moose Mountain and Nisbet reserves small plantations of a few hundred trees were set out in the spring from stock shipped from the Indian Head nursery. These trees are growing very nicely.

GRAZING.

The number of stock on the various forest reserves has been considerably increased during the past year as the settlers are becoming aware of the simple method by which they may secure forage. Two new stock associations have been formed in addition to the ones already organized the previous year. The grazing has been most in demand on the Elbow, Manito, Beaver Hills, Dundurn, Keppel and Seward forest reserves, mentioned in their order of importance. The possibilities of the northern reserves have not become known very largely to the people as yet, but numerous inquiries are being received and before very long the abundant forage and hay resources of these areas will be utilized. Numerous fenced grazing permits have been applied for on the timbered reserves, while herding is practiced to a great extent on the more open areas.

The fear of taxation by the provincial authorities of those holding fencing and grazing permits is causing a number to hold back and if this matter were definitely settled I feel sure that it would not be long before most of the grazing areas at least in the southern prairie reserves would be utilized.

FOREST SURVEYS.

Reconnaissance surveys were carried on by Mr. G. M. Dallyn in the country north of Prince Albert and in the vicinity of Montreal and Candle lakes during the past summer. Mr. A. V. Gilbert examined the territory north of Battleford in the vicinity of Makwa and Meadow lakes. Most of the territory was found unfit for agriculture and most adaptable for forest growth, although some very promising agricultural land with good soil indications was noted.

GAME.

The extension of the forest reserve area in the province during the past five years automatically created vast game refuges according to the provincial law under which all forest reserves were declared game refuges. During the past few months new legislation has been enacted somewhat modifying the extent of the refuges and eliminating several altogether. Only small portions of some of the northern reserves have been retained for game protection and this will eliminate considerable opposition to the creating of further forest reserves.

On many of the northern reserves the Indians secured their living from hunting and trapping and it was creating some hardship to cut them off altogether from this pursuit. However, the close seasons should be strictly enforced by both provincial and Dominion officers.

Several of the reserves such as the Dundurn, Manito, Keppel and Elbow are suitably situated to have a portion of their area left as a refuge for prairie chicken or ducks to the advantage of the surrounding community and it is to be regretted that this has not been done.

E. H. ROBERTS,
Acting District Inspector of Forest Reserves for Saskatchewan.

APPENDIX No. 4.

This report concerns the Alberta inspection district for the fiscal year 1915-16.

In previous reports I have discussed the problems which confront us as a result of the fundamental system of employment now in force. It is not my intention to lay further emphasis on this all-important problem, beyond pointing out that if there has been one time in the history of every Canadian organization when the need for developing the greatest possible efficiency has been of the utmost urgency, it surely is the present. A change from the present system to one in which merit shall be the sole basis of employment and advancement in the staff of the Forestry Branch is one which, more than anything else, will provide for the development of a live fire preventive organization, and an organization which will be able to keep up effectively with the advance in administration.

BOUNDARIES.

No material changes took place in the boundaries or areas of the forest reserves in this inspectorate. Although at various times different tracts of land have been examined and portions thereof recommended for creation as forest reserves, no action has as yet been taken to definitely set them aside for this purpose.

One rather important piece of work consisted of the Cypress Hills boundary survey which was performed by Mr. A. Gorman and his party. The work consisted in completely retracing the boundaries of the western and centre blocks of the Cypress Hills reserve. Owing to the fact that the original survey of this country was made a great number of years ago, the boundaries had in a very great many places become almost obliterated, and in consequence it was a difficult matter to provide for an efficient administration of the hay and timber permit business. At the same time that the boundaries were run Mr. Gorman retraced and marked a considerable number of the interior lines of subdivision. As a result of this survey the western and centre blocks of the Cypress Hills are provided with boundary and interior monuments which will be of the utmost value in conducting the business of the reserve. Owing to the limited staff which was available, it was impossible to provide for any boundary survey work in connection with the other reserves, except that done in connection with the ordinary reserve administration.

IMPROVEMENTS.

On all divisions of the Rocky Mountains reserve a severe rainy season set in about the middle of May and continued almost without interruption until well on into July. The precipitation throughout this part of Alberta was enormous, and resulted

not only in much damage to cities, towns and public works of the province, but, also, caused great loss to our previously constructed improvements, and seriously interfered with the field improvement programme for the season. Bridges, culverts, corduroy and grades were washed out, making maintenance work on new and old trails both necessary and costly. In the mountain sections of the reserves it is necessary, in order to avoid enormous expenditures, to take advantage in many places of stream valleys for the location of trails. In a season like 1915, therefore, when practically every watercourse was flooded, the damage to trails so located was great. It may be said that on the whole, however, the trail system came through in fair condition when due consideration is given to these abnormal conditions.

Athabaska Forest.—The improvement programme previously laid down was carried forward by the new supervisor. It was hoped that both Lower trail and the Mountain trail projects, and also the Hay River trail, which was to join up these two, would be completed. Owing to abnormal weather conditions, and to difficulties in securing labour, the trail programme was considerably reduced. In all, 42·5 miles of primary trail were constructed.

Although it was the intention to construct three cabins on the Athabaska forest during the past season the very severe winter rendered impossible the transportation of a considerable amount of the materials necessary. The log construction of two cabins was completed, however, and materials for the completion of these two cabins, as well as for the third cabin have been provided. One tool cache was erected; also one lookout tower was under way at the end of the fiscal year.

Brazeau Forest.—On this reserve 34·5 miles of primary trail were constructed. The main Mountain, or Bighorn, trail was completed from the terminal point of last year southward for a distance of 18 miles, so that this trail is now completed to within one mile of the inter-reserve boundary between the Brazeau and Clearwater forests. Other trails were built from Coalspur to the Macleod river, and from Coalspur to the Grave Flats cabin. On all of these the construction is of exceedingly high class. In addition to the primary trails the North Brazeau secondary trail, 19·5 miles in length, was constructed from Grave flats to the forks of the North and Main Brazeau rivers.

A total of about 35 miles of telephone line was completed. The first section of this line consisted of 19 miles from the headquarters at Mountain Park to the Grave Flats cabin. The other section, which is a continuation of the same line and which when completed will extend to the Southesk cabin, embraced the construction of approximately 16 miles of line. On completion of the lines and installation of the instruments the lines worked very satisfactorily. A certain amount of maintenance work was also done in connection with the Pacific Pass telephone line which had previously been constructed.

On this forest, also, the very severe weather conditions during the winter months rendered impracticable a certain amount of building construction which had been contemplated. One cabin authorized in the previous fiscal year was started although it was not finished.

Clearwater Forest.—Twenty-three miles of primary trail and 139·5 miles of secondary trail were built. In addition to the construction of these new trails the exceedingly bad weather conditions made necessary the expenditure of approximately $1,000 in ranger service and labour on the maintenance of trails which had been seriously damaged by the floods.

In my previous report I referred, in connection with the drowning of one of our rangers, to the necessity of providing some means of crossing, otherwise than by fording, the Saskatchewan river during high water periods. A start in this direction was made during the past season in the construction of the Saskatchewan aerial ferry at the Wilson ranger station. The span between the towers which carry the one-inch steel

cable is 258 feet, and the location of the ferry is on a straight stretch of the Saskatchewan, where very suitable banks were found for this type of construction. A large car was provided which will take care of any loads which it may be necessary to convey across the river. It is so designed that a man at either side of the river will be able to secure the car and to cross over himself by means of a continuous hauling rope.

Four new Class C cabins were constructed on the reserve and material taken out for two stables.

Bow River Forest.—The new trail construction on the Bow River forest was confined almost entirely to two main trails, one of which is the Lower trail from Morley southward, and the other, the Upper trail to the Red Deer ranger station. The former traversed country previously accessible by existing trails, which, however, were unsatisfactory for rapid transportation; the trail connecting the Aura and Red Deer ranger stations traversed country previously unprovided with any trail. In this latter trail, therefore, we have direct communication with the Red Deer valley, which up until last season was inaccessible except over inferior and lengthy trails. A total of 66 miles of primary trail was constructed. Owing to the bad weather conditions a large amount of time was devoted by the regular staff to the repair of previously existing trails. Destruction by floods was particularly evidenced in the Red Deer valley where two sections of the important Red Deer wagon road were entirely washed out.

The most important building project on this reserve was the construction of the Aura ranger station house which, in point of location, construction and cost, is one of the most satisfactory buildings in the district. At the same station a good-sized barn was erected with a stabling capacity for about ten head of horses or cattle. Another barn was erected at the Elbow ranger station. Other buildings consisted of one completed cache on the Sheep river and two other caches nearly completed.

Owing to the fact that a bridge over a steep canyon on the South Sheep road had fallen into disrepair, a new bridge was constructed having a total span of approximately 66 feet.

Crowsnest Forest.—Considerable progress was made in the provision of trail improvements on this reserve. Twenty-seven and a half miles of road were constructed, and thirty-nine miles of trail previously classified as approaching secondary were brought practically up to primary trail specifications. This work consisted of the improvement of the main north and south trail from Coleman to the Gap and Lynx creek, respectively. Nineteen miles of secondary trail were constructed, consisting essentially in new trail.

During the season thirty-five miles of telephone line were constructed, of which 15 miles consisted of a thorough overhauling of a previously existing line, while the remainder consisted of entirely new work. In addition to this numerous repairs were made on another previously existing line, so that now we have through telephone communication over all lines which have been built on the Crowsnest forest. Toward the close of the fiscal year a considerable amount of material was secured for further telephone work to be undertaken during the coming improvement season.

Although it was planned to construct a considerable number of caches during the winter, the exceedingly heavy snowfall made it impossible to erect more than one. The floods of last spring carried away one span of the bridge across the Livingstone river, which rendered necessary its thorough repair.

Lesser Slave Reserve.—During the past year an excellent beginning has been made in providing the reserve with proper transportation facilities. Approximately 95 miles of primary trail were constructed, much of the construction being good enough for wagon travel. Five-and-a-half miles of heavy maintenance work was done on the Grizzly trail. In addition to this, a total of 35 miles of previously existing trail was

improved by ranger labour, with the result that the country traversed by these latter trails is now very accessible to saddle and pack-horse travel. As the result of last year's work it will be possible during the coming season to extend the trails westward to the western boundary of the reserve, now difficult of access.

A good beginning has been made in providing cabin and ranger station accommodation on this reserve. A station and stable have been erected on the Swan river, and one cabin at Martin mountain.

Cypress Hills Forest.—Owing to the fact that this reserve has an adequate trail system no work of this character was undertaken during the past year, but it will be necessary that a certain amount of repairs be undertaken during the coming year. Although it was expected that some work would be done on the Cypress Hills summer resort, this was not undertaken owing to the fact that the financial depression has resulted in very little use being made of the resort.

One of the most important improvement projects undertaken on this reserve was the construction of a telephone line from the headquarters on Battle creek to the western end of the reserve connecting the headquarters with the Battle Creek and Spring Creek ranger stations. This line is about seventeen miles long and is erected on poles throughout its entire length. It gives direct telephone communication between the supervisor's house and the stations of two of the rangers, and is of great advantage in the control of the reserve administration.

Other projects completed were the erection of a house and barn at headquarters and the erection of a house at Spring Creek station. Materials were purchased for stables at Spring Creek and at Battle Creek stations. Sixty-four miles of fireguard were ploughed.

With the progress during the last two years great strides have been made in the provision of proper facilities for the administration of the reserve. The end of the next fiscal year should see the reserve practically provided with all the necessary buildings, and thereafter it should be possible to devote most of the time to the development of the telephone system and to a more intensive administration of the reserve along forestry lines proper.

General.—In summarizing the improvement work for the individual reserves of the district, it may be stated that a total of about 330 miles of primary trails and roads, and approximately 210 miles of secondary trails were constructed, which, added to the large amount of trail maintenance work done on each reserve, the extensive work in the location of future trails and the construction of auxiliary trails which are not reported as specific projects, indicates that a distinct advance was made in providing one of the fundamentals for any fire protective organization—a good trail system. There was considerable variation in cost, due to the varying conditions met with and due also to the varying interpretations given to the specifications by the different men having charge of the work. Realizing that it is necessary that the work should be more closely standardized throughout the district, this matter was fully discussed at a meeting recently held at my office.

A serious endeavour is also being made to compile figures which will give a thorough idea as to the costs of various details entering into trail construction. Owing to the extremely varying conditions under which we work, it will probably never be possible to provide estimates for trail or road construction such as is possible in the city or in the farming country. Nevertheless it is our intention to go so far as possible in this direction, as it is realized that the proper keeping of cost data should have a very direct bearing indeed upon the cost of further trails.

In summarizing the telephone work of the district it will be found that altogether approximately 88 miles have been constructed, 15 miles of which consisted of very heavy repair work.

In summarizing the work on buildings it will be seen that one supervisor's house and office and two Class A ranger stations have been constructed; three Class B cabins were started; nine Class C cabins were built and nearly completed; and a total of four barns and stables completed and four others well under way. In view of the progress made during the last few years it will not be long now until at least some of the reserves are pretty adequately provided with stopping places. In order to more definitely show the classes of buildings which are being constructed, to make the records more complete and to have on hand definite building plans which may be used for further construction we are arranging to have a complete set of building plans of typical buildings for the district prepared.

FIRE PROTECTION.

On all divisions of the Rocky Mountains forest reserve there was superabundant precipitation, starting early in the season and continuing into the summer, so that the reserves were almost entirely protected by natural agents during what is usually the most dangerous period. After the rains ceased there was still sufficient moisture in the woods to prevent any great danger from fire. The conditions on the Cypress Hills reserve, situated in the southeastern portion of the province, were somewhat similar. On the Lesser Slave reserve, however, conditions were different. Although there was considerable precipitation on this reserve, it did not extend over the same periods, nor was it as heavy as on the Rocky mountains. The Lesser Slave reserve was the only one on which fires occurred during the month of June and, with the exception of one reserve, it was the only reserve where fires occurred during the month of May. The total number of fires reported on reserves for the whole inspection district was sixteen, five of which occurred on the Clearwater, four each on the Lesser Slave and Brazeau, two on the Bow River, one on the Crowsnest and none on the Athabaska and Cypress Hills reserves. These figures indicate that the Clearwater had the largest number of fires, and in this connection it may be pointed out that in the valley of the Saskatchewan there is, during the winter months, comparatively little snow. The result is that if a dry hot spell is experienced in the month of April fires are exceedingly liable to break out, particularly where any of the customary agents in the source of fire are present. This was exactly the state of affairs on the Clearwater, where in April a dry spell was experienced when there was practically no snow on the ground. Moreover the four fires which occurred in that month were all in the immediate vicinity of the town of Nordegg. Due to the fact that operations at the mine were somewhat slack, a large number of the miners resident in the town were continually making little picnic trips into the woods, with the result that the danger from camp-fires was great, and some of these fires were due to this cause. The total area burned over on the reserves of the district was approximately 2,030 acres. On only about four acres was merchantable timber destroyed; approximately nine hundred acres of the fire-killed area was young growth; approximately one thousand acres was in old "burn," and about one hundred acres grass-land. The total estimated damage to merchantable timber and young growth was approximately $2,350. These figures clearly indicate the very slight amount of damage done by fires.

Owing to the fact that the season was such an unusual one there is comparatively little to be learned from a comparison of the fire statistics for this district. It may be stated, however, that two agents—railways and careless campers—were the most important of the known factors in the cause of forest fires. For 25 per cent of the fires which occurred the causes were not determined. On all the reserves, with the exception of the Athabaska and Cypress Hills, where no fires occurred, most of the fires started during the month of April. In this particular month we were rather anxious as to what the results of the approaching season would be, for numerous fires started in April and conditions looked very much as though they might become very serious. Shortly after, however, the rains set in and we were relieved of further worries for practically the entire season.

SILVICULTURE.

During the year only two new timber sales were actually made, one of which was an exceedingly small sale of saw-timber, the other also being a comparatively small sale of mining timber. Both of these sales took place on the Crowsnest forest. Three other sales were inaugurated, of which two fell through and the details of the third have not as yet been completed. It will be realized that under the present financial conditions there is but little opportunity for much development along the lines of new timber sale work. A very considerable amount of work was done, however, in connection with sales already in operation and, generally speaking, it may be stated that considerably greater attention has been devoted to this phase of the work both by the reserve offices and this office, and efforts have been made to increase the efficiency both in the administration of old sales and in the development of new ones. The most important sales under operation at the present time are those to the mining companies. We have every indication that the coal mines of the province, present and future, will continue to offer the main outlet for a product which the forests of the Rocky Mountains reserve are eminently in a position to provide. Although one would naturally expect that, in the Crowsnest pass, where there are so many mining operations, we would have considerable sale for mining timber, it so happens that the majority of sales which have been effected on this reserve are for saw-timber. This is due to the fact that by far the greater proportion of the merchantable timber in the Crowsnest pass is held by private corporations, and, in the second place, very heavy competition is offered to the sale of mining timber by timber operators in the Crowsnest pass on the British Columbia side. In addition to this, our regulations have not until recently made provision for the quick sale of small amounts of timber, the result being that few operators on the Alberta side had gone into the mining-timber business. For this reason an amendment to the regulations was proposed whereby small operators will be enabled to purchase without competition small amounts of dead timber. Generally speaking, there is but a small proportion of this dead timber which is at all suitable for sawlog purposes, but there still remains on the areas adjacent to the Crowsnest pass large amounts of fire-killed timber which is perfectly suitable for utilization in the various mines. The disposal of such timber under the amendment proposed will, therefore, serve two purposes; in the first place it will rid us of extensive supplies of timber which will soon become unmerchantable, thereby effecting to a certain extent a cleaning-up of some areas of the reserve, and, in the second place, it should make possible the development of a considerable number of small mine-timber operations, thus offering to a certain extent a new field of work for such residents of the Crowsnest pass as desire to engage therein. It is unnecessary to state that when there is so much dry mining timber in the Crowsnest pass, it is hardly reasonable that it should be necessary to import mining timber by rail from British Columbia.

On the Bow River forest no timber sales have up until the present time developed, this being due to the fact that the larger proportion of the merchantable timber on this forest is embraced within licensed timber berths, and as numerous mills are established, for which the supply of timber is obtained from timber berths and permit berths, both inside and outside the forest reserve, there is but small demand for timber sales which would include saw-timber. Besides there are no operating mining companies in this forest, so that there has been no development in the mine-timber business. On the Clearwater reserve the only sale in effect is that of the Brazeau Collieries, although small amounts of timber are handled under permit to the Saunders Creek Coal Company. On the Brazeau reserve one sale only is in operation, the company concerned being the Mountain Park Coal Company. Although there are three other mining companies having extensive holdings in this forest, two of them are at the present time not operating, while the third is provided with its own supply of

timber and, consequently, has not up to the present time required timber from the forest reserve. On the Athabaska and Lesser Slave reserves there are no mining companies in operation nor are there any saw-mills, consequently there is no market for either class of materials. On the Cypress Hills reserve there is one small saw-mill outfit operating a very small sale under agreement with this branch; on this reserve, however, there is little merchantable timber and that which is being taken out at the present time consists of rather an over-mature stand of jack pine and spruce.

In the appointment of a well qualified forest assistant to the Clearwater forest opportunity was offered for a very close study of timber sale work as applied to mining timber. The Brazeau Collieries timber sale on that forest has been in operation for several years and still has about five years to run. Moreover, the operation is in close proximity to one of the most important administrative points of the reserve. The long period through which this sale is operative and the size of the operation offer particular advantages for a comprehensive study of all the operations, and I may say that close attention has been paid to marking, close utilization and to brush disposal in connection with this sale. As a result of the attention given to this sale we shall soon have a comprehensive report giving detailed information with regard to the procedure adopted and the results obtained. It may be stated generally, however, that all timber to be removed was marked by the forest officers, all merchantable timber suitable for mine-props or lagging was removed and utilized, low stumps were required and a very satisfactory disposal was made of all brush resulting from the operations. On other sales in operation throughout the district different methods were followed, but in connection with each one the timber to be cut was either marked or definitely designated, close utilization enforced and a good brush disposal secured. It is perhaps unnecessary to say that the reasons for these rigorous measures being applied to the disposal of timber is that they are indispensable measures in any place where it is desired to give proper attention to silvicultural developments of the forest and sufficient recognition to fire protection. In contradistinction to timber sales under operation by this branch we have also inside the forest reserves large areas of licensed timber berths. Although financial conditions have to a very great extent curtailed operations on such timber berths, there are a few cases where limited operations have been conducted, in none of which have there been proper requirements with regard to brush disposal. It is easy to see that it is impossible to obtain recognition of any silvicultural principles when operations are conducted in this manner. Also, when no attention whatever is given to brush disposal, a very great increase takes place in the fire hazard on the reserve. Such of these timber berths as have in previous years been cut over now constitute one of the most serious fire hazards with which we have to deal. In view of the strides which have been made in certain parts of the country, it seems to be a rather unfortunate and unsatisfactory method of procedure to allow cutting of this nature to be conducted, and, in these days when the very great necessity for husbanding the natural resources of this country is being emphasized in all directions, it is most disconcerting to see conditions of this kind allowed to continue, whereby the fire hazard on the forest reserves is increasing.

The timber permit business continued much along the same lines as described last year, although efforts have been made to pay greater attention to the matter of brush disposal on the permit areas. The greater part of the timber permit business is confined to the Bow River and Crowsnest forests in the Rocky mountains, and the Cypress Hills forest reserve in southeastern Alberta. On the latter two forests the timber permit business reaches considerable dimensions, owing to the fact that the country immediately adjacent to the reserves is practically dependent on the reserves for timber supply.

GRAZING.

As it was not possible to provide additions to the staff for the purpose of further developing the grazing administration, there was no very great development in this

line of work. The intensive administration of grazing was, therefore, confined for the most part to the Crowsnest and Bow River forests, on which reserves there is the greatest demand for the range. On the Clearwater forest several permits were issued, but it cannot be stated that this reserve has been definitely organized for grazing. On the Brazeau reserve there is comparatively little range; also, owing to the fact that the country to the east of the reserve is comparatively unsettled, there is little or no demand for grazing at the present time. Practically speaking, therefore, there is no grazing administration on this forest. On the Athabaska forest there is probably a little more extensive range than exists on the Brazeau, but in the case of this reserve, also, there is but little settlement adjoining the reserve and consequently there is practically no demand for grazing by outsiders. There are, however, two or three different outfits located inside the reserve and, consequently, it will probably be necessary to make arrangement for the issuance of permits this year. On the Lesser Slave reserve there is considerable range available, yet up to the present time there has been little or no demand for range and no grazing administration has been effected. On the Cypress Hills reserve the conditions with regard to grazing still remain in a rather unsettled state. During the past season, however, a report with regard to the fencing situation was prepared in connection with the boundary survey work, so that, if it is considered necessary to adopt this measure of control, we have secured considerable information upon the basis of which operations can be started.

At the beginning of the season several grazing divisions of the Crowsnest forest were in rather poor condition, owing to the fact that there had been a certain amount of over-stocking in the previous year. In all divisions of the Rocky mountains we experienced a very wet season and as a result of this there was, on some reserves, a most luxuriant growth of forage plants, while in other localities there was altogether too much precipitation for the successful growth of forage. It is unnecessary to point out, also, that in a season like last year, when practically all low-lying lands were flooded for a considerable length of time, meadows and sloughs, which in the average year offer some facilities for grazing, were almost entirely cut off from utilization of this sort. The only places where any over-stocking occurred during the past season consisted of two separate areas on the Clearwater forest. On the remainder of the Clearwater and on the Bow River and the Crowsnest forests the range came through the season in exceptionally good condition, and at the end of the grazing year conditions were very satisfactory.

The total number of stock grazed on the Crowsnest forest was 4,377 head, consisting of 3,914 head of cattle and 463 head of horses. On comparison with the figures given for last year it will be noted that there was rather a startling reduction in the amount of stock handled under permit. In the fiscal year 1914-15, 12,000 head of sheep were grazed in the Livingstone valley. Owing to difficulties which occurred in trailing these sheep from the southern part of the province stringent measures were adopted to prevent a recurrence of the same. It was expected use would be made of the range by stockmen who would transport the sheep by rail but plans to this end fell through, nor were strenuous efforts toward this end for the coming season more successful. This, therefore, accounts for the reduction of 12,000 head in the total number of stock grazed on the forest. In addition to this, it should be pointed out that owing to the large increase in the size of the Waterton Lakes park, and the consequent decrease in the forest reserve, several grazing divisions were cut off from our administration, which was the cause of a reduction of at least 3,500 or 4,000 head of stock. Making the necessary allowance for these two features, therefore, it would appear that there has been a slight increase in the horses and cattle grazed on the various divisions of the present Crowsnest forest. On the Bow River a total of 2,345 head of stock was handled, consisting of 1,802 head of cattle and 543 head of horses. This indicates a very small net increase in the total number of stock. The number of cattle grazed was reduced, while the number of horses increased. No sheep were grazed on this reserve. On the Clearwater forest 62 head of horses and 15 head of cattle were grazed

under permit. No permits were issued for the other reserves. The above figures would indicate that a total of 6,799 head of stock was grazed throughout the district and it may be pointed out that this was divided amongst a total of 94 permit holders. This would indicate an average of about 73 head of stock per permittee. Although in numerous cases the number of stock owned by the individual was considerably greater than this, it would appear that one of the objects of the grazing administration, namely, to encourage the stock industry amongst the small owners, is receiving thorough recognition.

In effecting an efficient grazing administration the anomaly with regard to grazing on timber berths still presents the difficulties which were referred to in my last report. It is greatly to be desired, therefore, that suitable steps should be taken whereby some readjustment of this question may be obtained. Last year I referred to the necessity of providing a capable man to make a special study of the grazing administration who could give considerable time to the study of range conditions and experiments for range improvement. Up to the present time we have not secured a man to specially take over this line of work.

Through co-operation with the Department of Agriculture, however, it was possible for us last year to make a beginning with the study of range conditions. Dr. Malte, the expert of the Department of Agriculture, was accompanied by Assistant Inspector C. H. Morse and Supervisor R. M. Brown of the Crowsnest forest, and during an investigation extending over two weeks a representative collection of about 270 species of plants was made. This was very satisfactory from the standpoint of the systematic botanist and placed us in possession of valuable information with regard to forage plants. This work, however, requires to be supplemented by that of someone who has made a special study of range problems and who can advise us in regard to the solution of grazing problems. Particular attention was paid to the poisonous plant situation in the Crowsnest forest, owing to the difficulties which had arisen as the result of considerable loss of stock by permittees. It was found, however, that although numerous poisonous plants existed in the Crowsnest forest, practically all the losses which had taken place should be attributed to the presence of larkspur which, particularly in the southern part of the Porcupine hills, is somewhat prevalent. Two or three plants, which had commonly been regarded by grazing permittees and ranchers as extremely poisonous, have no poisonous properties whatsoever. As a result of this investigation an illustrated circular has been prepared and issued dealing with the conclusions reached with regard to poisonous plants and also embracing useful information with regard to preventive and curative measures.

SURVEYS.

In my last annual report I indicated that there still remained, on the Clearwater reserve, a considerable amount of work to be done before the traverse survey of that reserve would be completed. A party was started early in May, in charge of Mr. A. Gorman, and, in spite of the very unfavourable weather conditions, excellent progress was made, and at the beginning of August all the work for that reserve was completed. A total of approximately 200 miles of primary traverse was run, supplemented by approximately 190 miles of secondary traverse work. The Saskatchewan valley was traversed from the mouth of the White Goat river southwestward to the mouth of the north fork of the Saskatchewan. Returning to the Wilson ranger station at the mouth of White Rabbit creek, the survey was carried up that stream to its head, tying on to a previously established monument on the headwaters of the Ram river. The survey was then continued southward to the Clearwater river, and thence down the Clearwater to a previously established monument at the Parks ranger station. From a point on this latter course a traverse was run southward to the summit between the Clearwater and Bow River forests. The main traverse was then carried

up the Clearwater river to its head, and thence into the Pipestone pass; on the summit of which another monument was established, indicating the boundary between the Bow River and Clearwater forests. The main traverse was then projected down the Siffleur river to its mouth, closing the loop at the Wilson ranger station. The party then returned to the mouth of the White Goat river from which point the main traverse was carried up that river to the summit between the Brazeau and Clearwater forests. A traverse was also made of Coral creek to the summit between these two reserves. With the completion of this work we have now definitely established several monuments on the inter-reserve boundaries between the Clearwater and the Bow River on the south, and the Clearwater and the Brazeau on the north. The secondary traverse work involved a rough survey of the important creeks and waterways tributary to the main valleys through which the primary traverse was run.

It was hoped that the survey of the Athabaska forest could also be commenced, but, owing to the fact that the trail programme for that reserve had not sufficiently advanced, it was considered inadvisable, with the small amount of time still at our disposal, to start work on that forest.

USES.

During the year there have been no unusual developments in the uses of the reserves. No additional mining companies have commenced operation and, therefore, no new townsite locations have been applied for. Financial conditions have retarded development work of this nature and it will probably be some time before any extensions are necessary for this purpose. The same conditions interfered to a very great extent with the development of the summer resort on the Cypress Hills forest reserve. Although a large number of lots were applied for some time ago, and although, in order to give applicants better opportunities to complete their agreements, time extensions were made, there has been practically no development in this resort, and a large number of agreements have been cancelled.

TRESPASS.

The introduction of a closely supervised permit system in the disposal of timber naturally led to the discovery of numerous cases where people were removing timber from the forest reserve without having taken the steps required by the forest regulations. Quite a number of such cases have been dealt with during the past year, some of which have been settled on the basis of payment of double dues. In other cases, however, where the trespass has been more flagrant, we have found it necessary to confiscate the timber and dispose of it by private sale as provided by the regulations. Still further, in one or two cases, it has been considered advisable to prosecute the persons concerned in the trespass, for the reason that the trespass in question was committed clearly in defiance of the forest regulations. Such cases, in addition to giving the persons prosecuted a clear idea as to what is required of them, have had an exemplary effect on the settlers resident in the district where the trespass occurred. Similarly there have been numerous cases where the regulations with regard to hay disposal have not been observed, resulting in quite a number of seizures being made by the forest officers. Prosecutions have also been successfully undertaken in a few cases where the fishing regulations were not properly observed.

FISH AND GAME.

Owing to the abnormal flood conditions existing for a considerable part of the last fishing season there was a notable decrease in the number of fishermen who

resorted to the forest reserve for recreation. Now that we are provided with our own fishing permits it is a good deal easier to control the situation so far as the reserves are concerned, and the results obtained are much more satisfactory. Taking, for instance, the Brazeau forest, where formerly but little attention was given to fishing regulations, last season eighty-one permits were issued by officers or agents of the branch. At Nordegg in the Clearwater forest, also a town situated inside the reserve, a considerable number of permits were issued. In the case of both these reserves the towns from which the fishermen came are entirely inside the reserve. The Crowsnest forest, on the other hand, does not contain any towns or villages but it has, closely adjacent to its boundaries in the Crowsnest pass, a very considerable number of towns and villages, and from these points people go for short fishing trips. There were several cases in the district where it was necessary to prosecute offenders against the regulations. While it is not desired to carry prosecutions to the extreme, it will be recognized that there is not much use in having regulations unless some action is taken to enforce them, and it is hoped that with a few examples there will be a more thorough appreciation by the public that it is both necessary and advisable to conform to the regulations. It would appear that some waters of the district are becoming fished out. A very great decrease in the number of fish to be obtained is noted in the Crowsnest pass and, also, on the north fork of the Highwood. The very heavy fishing season of 1914 exhausted to a great extent the fishing resources of that river. Jumping Pound creek, which was formerly an exceedingly good fishing ground, has also become somewhat depleted. It will probably be necessary in some such places as these to extend the close season for the entire year in order to give the streams an opportunity to restock. In general it may be stated that the co-operative arrangement between the Department of Marine and Fisheries and the Forestry Branch is one which should prove mutually beneficial.

It is again necessary to emphasize that Indians and half-breeds are the primary agents in the killing of the big game of this province, particularly as applied to forest reserves. In fact, the depredations of the various bands of these Indians are so serious that, unless vigorous steps are taken to curtail their activities, there is a great liability that certain portions of the province, up to the present time considered as about the best game areas in the country, will be entirely cleared of game. Of the Indians, by far the most serious group with which we have to deal is the Stony tribe. Numerous reports have already been submitted with regard to the depredations of that branch of the Stony tribe which located some years ago on the Kootenay plains of the North Saskatchewan. These Indians yearly organize big hunting expeditions and penetrate northward into the Brazeau country, and during other portions of the year hunt more or less locally in the country tributary to the Saskatchewan valley. Exceedingly large numbers of deer, mountain sheep and mountain goat are annually disposed of by this small band of Indians. Another band of the Stony Indians appear to travel southward each year, and during the past fall they visited the upper Livingstone country with the result that this particular area was practically cleared of deer, and large numbers of other game animals were killed. In addition to these two bands, large numbers of Stony Indians leave their reserve at Morley at various times of the year for the purpose of securing meat and hides.

At Grand Cache, on the Smoky river, a band of Cree half-breeds have established themselves, and their hunting expeditions into the surrounding country are of such a nature and extent as to cause very grave fears that, unless vigorous action is taken, this wonderful game country will also be depleted. The third case where Indians are seriously affecting the game situation is on the southern part of the Lesser Slave reserve. To this country considerable numbers of Indians from the Lake St. Ann country go in search of meat and hides.

The above refers more particularly to big game. However, there are numerous places in the province, particularly on the northern reserves, where great carelessness

is exhibited with regard to the law as applied to the hunting and trapping of small game. This is not only on the part of Indians, but also there are numerous white trappers whose operations should be carefully watched in order that greater attention to the game laws of the country may be enforced. The Rocky mountains of Alberta, and also some other portions of the province, offer some of the finest big-game country which probably is to be found in Canada, and as such there is no doubt as to its very great value as a national asset. At the present time the greater part of this country is inaccessible to the great majority of the people. Nevertheless, with the development of the country as a result of the incoming of railroads and as a result of the large extensions which are being made to the trail systems in the Rocky mountains by this branch, this country will ere long be readily accessible. While all these developments are taking place, however, we have these Indian tribes, which in the total consist of a comparatively small number of men, making periodical depredations upon the game in districts where it has been most plentiful.

EQUIPMENT AND SUPPLIES.

In my last report I indicated that the fire season of 1914 had shown that adequate provision had not been made for the purchase and storage of sufficient fire-fighting equipment. During the past year an effort has been made to rectify this state of affairs, and a large amount of emergency fire-fighting outfit has been secured and stored at headquarters, ranger stations and in numerous cases at outlying caches.

I think that, perhaps, it is desirable that I should make reference to the new portable telephone which has been devised. We have every indication that this new instrument, which weighs about one-third as much as the old style of portable telephone, will entirely replace the older instruments. Not only are they much more portable, but with a reasonable amount of care in packing they are, in my opinion, less susceptible of injury than is the old style of instrument. Moreover, they are considerably cheaper than the old ones, and as a result of this there is little reason why they should not be generally adopted.

Although no definite standardization of equipment has as yet been effected steps in this direction are being made, the result being that the classes of equipment used are more and more approaching definite standards, and we shall soon be in a position to prepare memoranda which will definitely outline the various classes of equipment which may be purchased and used on the forest reserves.

EDUCATION AND PUBLICITY.

I am sorry that I am not able to report much progress under this heading, owing to the fact that the administration and improvement work of the district has been so extensive as to require the attention of the administrative officers for practically the whole time. Although efforts are made to advise the public with regard to the purposes of, and administrative features in connection with, the Forestry Branch, it has not up to the present time been found possible to do so by means of any extensive publicity campaign. There is no doubt whatever that where a greater amount of time can be devoted to the giving of lectures and the preparation of newspaper reports, the results would be such as to make the general public much more familiar with the principles in recognition of which our organization exists, and the results which we are endeavouring to secure in the administration of the forest reserves. During the recent supervisors' meeting at my office we discussed this matter of education, and I emphasized the importance and necessity of each man taking every possible action to make known the work of this branch. Various methods by which we can draw the attention of the public to the necessity for fire prevention

were discussed and we have already taken some steps for putting a few plans into operation by which it is hoped to catch the eye of the public. I have also definitely in view an educational propaganda for the next fiscal year, but whether it will be possible to carry it into effect will depend on the time which may be available. Every effort will be made to give at least some time to this important problem.

RAILWAY FIRE PROTECTION.

The personal inspection of the railway work in Alberta continued under the direction of Divisional Fire Inspector T. McNaughton. I desire, however, to make a few general remarks with regard to the situation of railway fire protection in this province. The railways with which we have to deal are the Grand Trunk Pacific and the Canadian Northern from Edmonton westward to Jasper park, including the branches; the Canadian Northern from Edmonton to Athabaska, and the Edmonton, Dunvegan and British Columbia railway from Edmonton to the end of construction in the Peace River country. In addition to the work carried out under Mr. McNaughton's supervision a certain amount of railway work is under the direction of the forest officers on the Crowsnest and Clearwater forests.

Although the past season was certainly not one in which any fire fighting organization was put to severe test in the railway work it is felt that considerable progress has been made. The organization for the detailed inspection of railway work was similar to that described in my last annual report, namely, that one inspector devoted his entire time to the Edmonton, Dunvegan and British Columbia railway, and another spent his entire time in the inspection of the Grand Trunk Pacific and Canadian Northern railways from Edmonton west, including the branches. Other inspections were carried out in connection with the reserve organization from time to time as occasion demanded.

The Canadian Northern patrol organization continued throughout the past season as an efficient and well organized system of fire patrol. I previously pointed out that the success which has been attained by this railway company must primarily be attributed to the fact that they had given definite recognition to the necessity of a separate fire protection department, the result being that one man was entrusted with the development and supervision of this organization. Owing to the fact that the company did not do a great deal of work on the line west of Edmonton it was rather difficult to make a proper provision for the thorough cleaning up of the right of way. Although this was assuredly necessary it happened that, with the very favourable condition existing last year, no very serious fires occurred nor was much damage done.

The Grand Trunk Pacific, on the other hand, has been in operation west of Edmonton for some years and, although a great deal of attention has been given by this company to the establishment of a clean right of way, the railway patrol organization has been entirely unsatisfactory. I attribute this directly to the fact that this company, in particular, have not given sufficient recognition to the necessity of definitely organizing for fire protection work, the result being that although a certain number of patrol men were appointed, provided with the necessary speeders and set to work on the line, the amount of supervision given to them was so small that results obtained could not in any sense be termed satisfactory. The method of patrol on the Grand Trunk Pacific has been by motor-speeder and, as through four years of operation the company have never provided an adequate or sufficiently systematic patrol, strong representations were made to the Railway Commission, with the result that the latter body has required the company to establish a systematic patrol by means of velocipedes. It is felt that as a result of this action it will be possible to provide for considerably increased efficiency in the patrol organization.

In my last report it was necessary for me to speak rather forcibly with regard to the utter disregard on the part of the Edmonton, Dunvegan and British Columbia

railway of the fire protective requirements of the Board of Railway Commissioners; as a result of the hearing before the Railway Commission in November, 1914, however, I am glad to state that this company has shown conclusively that it can and will provide an efficient fire protective organization. A thoroughly efficient patrol organization was effected during the past year and also very considerable progress was made in regard to right of way clearing. Although the company's organization was by no means put to any severe test the records would indicate that any fires which did start were successfully controlled. Furthermore, there has been a most notable difference in the conditions of the fire protective appliances on the locomotives of the company.

FIRE-RANGING.

The fire-ranging organization to cover that part of this province outside of forest reserves, was divided into four districts, namely, Edmonton, McMurray, Slave and Mackenzie River. Previous to last season no special organization had been provided for the last named district, although a certain amount of very general oversight had been given to fire protection matters by the Government agent at Fort Simpson. Of these four districts the Edmonton district is by far the largest and the most important. Major R. H. Palmer, chief fire ranger of the district, enlisted for overseas service toward the latter part of the previous fiscal year and the work of supervision was taken over during his absence by Mr. Geo. B. Campbell. To assist in the detailed supervision of the staff of about forty rangers employed during the season four subchief rangers were appointed. In past years patrol was made by steamboat on the Athabaska river as far north as Grand Rapids. This was necessary, owing to the heavy freight traffic on the river. Owing to the construction of the Edmonton, Dunvegan and British Columbia railway freight is now sent by rail to Peace River Crossing, and traffic along the Athabaska greatly reduced. The steamboat patrol was, therefore, discontinued and the patrol carried on as in other districts.

Owing to weather conditions, particularly in the northern part of the Edmonton district, the loss from fire seems to have been small. Our data with regard to fires is meagre, but it would appear that only eight fires attained a size of over ten acres in extent and that the total area burned over by such fires was approximately 4,000 acres. In the northern parts of the district conditions were considerably drier and, although we have no reports of many large fires having occurred, I am inclined to the opinion that if all data were available the figures would swell to greater proportions the area indicated above. Also a considerable number of small fires occurred which were extinguished by fire rangers or others. Apparently the number of such small fires would aggregate well over 100. During the fiscal year it has been found that considerable portions of districts formerly assigned to rangers consisted essentially of agricultural land and an effort was, therefore, made to withdraw, so far as possible, such land from the area of actual patrol. In the arrangement of districts for the coming season this point is being given a still further consideration than was possible during the operating season last year.

The McMurray fire-ranging district, which lies to the north of the eastern part of the Edmonton district, was manned by a staff consisting of a chief fire ranger and twelve rangers and assistant rangers. Patrol in this district is essentially by means of canoes, although in the southeastern portion of the district a certain amount of pack-horse travel is resorted to.

The fire situation in this district was more serious than in other parts of Alberta, due to the fact that spring set in very early and the reports would indicate that the weather was hot and dry pretty steadily from April until August or September. Eighty-one fires are reported; thirty-nine of which were started by campers, twenty-four by railways, six by settlers, six by surveyors and six by causes unknown. In the

north country there is, of course, much moving about on the part of the population. Most people, at some time or other, resort to travel by canoe or pack train, with the result that many camp fires are necessary for cooking and warmth. Carelessness in connection with camp fires was the most prolific source of fires. The Alberta and Great Waterways railway is now being fast extended to McMurray and, as is generally the case, numerous fires took place on this line. It would appear, however, that the majority of them were well controlled and my information is to the effect that there has been comparatively little fire damage as a result of the construction of this railroad. It is unfortunate that we have to note six fires as being started by surveyors. If there is one class of men who should be perfectly familiar with the awful destruction which may result from a little carelessness with a camp fire, it is surveyors, for they, in working in widely separated parts of the country, particularly the newer parts, have only to look about them to see the results of previous fires. There have been numerous cases, however, where they or their employees have not been sufficiently careful with regard to the use of fire. While I presume that the main difficulty lies with the employees on such surveys, some means ought to be taken whereby all would be sufficiently under the instructions and oversight of the surveyor in charge to obviate any danger of fires spreading from their camps. It would appear that the total area burned over in the McMurray district approximates one hundred thousand acres.

My information with regard to operations in the Slave and Mackenzie River districts is very meagre indeed. It might be stated, however, that in the Slave district patrol was effected by means of steamboats, one of which operates above Smith Landing, embracing the waters of lake Athabaska and the Slave river, the other operating from Fort Smith northward on the Great Slave river to Great Slave lake. In charge of each patrol boat was a chief ranger who was provided with a crew consisting of an engineer and deck-hand and such additional help as might be necessary from time to time under the varying circumstances. In the Mackenzie River district the staff consisted of four men operating under the direction of the Government agent at Fort Simpson. Patrol in this district appears to have been almost entirely by canoe. On a river the size of the mighty Mackenzie but little progress can be made in fire protection by men operating in canoes, and what is really needed for that district is an efficient fire patrol by means of one or more steamboats properly provided with the necessary equipment for extinguishing fires. It is useless to undertake the large expenditure which is necessary in the operation of steamboats, however, until adequate provision is first made for a proper supervision of the work of the district. Although the Government agent at Fort Simpson appears to have given considerable attention to the fire-ranging work, it is only necessary for one to glance at a map of this portion of Canada to see that the enormous size of the country is sufficient warrant for the appointment of a staff of fire rangers in charge of a man specially qualified and specially appointed for the exclusive work of fire protection.

Speaking generally with regard to the fire-ranging organization I would point out that it will probably never be possible to develop a highly efficient fire-preventive organization under the present methods. Although the number of fires which are extinguished by the ranger staff at present provided justify, in potential dollars and cents, the expenditure made, it is certainly quite true that no really highly specialized organization can be developed under the present system. The fundamental reason for this is that, when this branch has no administrative control over lands embraced within the fire-ranging districts except in so far as fire protection is concerned, it is impracticable to consider the provision of adequate transportation facilities and other improvements, upon all of which any successful fire protective organization is absolutely dependent. The best policy which can be pursued, therefore, is a continuation of the policy of the department for the past few years in greatly extending areas

of the forest reserves. By this I do not mean that lands which are suitable for agriculture or other such purposes should be set aside as forest reserves, but that land which is essentially forest land, and which can never be more profitably devoted to other pursuits, should be definitely reserved for forest purposes. When such action is taken it will then be possible to formulate definite administrative plans for such areas, which would include a comprehensive plan of improvements which are necessary if a high-class organization is to be developed. It may further be stated that it is in the fire-ranging organization that the difficulties of the present system of employment are emphasized. Under the present organization in fire-ranging districts, it is necessary that a man should be left to himself a considerable part of the time, and, if effective service is to be obtained, it is very necessary that the man so appointed should be of the very highest character and qualifications.

E. H. FINLAYSON,
District Inspector of Forest Reserves for Alberta.

APPENDIX No. 5.

This report concerns the work in the British Columbia inspection district for the fiscal year 1915-16.

FOREST RESERVES.

Personnel.—The forest reserves staff was further depleted during the year by the enlistment of the Forest Supervisor, Mr. W. L. Scandrett and one ranger. No new appointments were made to replace these officers.

Proposed extensions.—In my report of last year I mentioned that the work of delineating boundaries of proposed extensions of the area under forest reserves in this district was completed. No action has been taken to date to establish new reserves as recommended in the reports of these surveys, although the policy of increasing the forest reserve area as soon as examinations are made has received the strongest endorsement of the Commission of Conservation and the Canadian Forestry Association. The recommendations for additional reserves in this district may be divided into two classes: (1) area within the Dry Belt required for the protection of watersheds of streams used in irrigation; (2) forest areas in mountain regions where the land is unsuited for the production of any crop other than timber.

It is my opinion that to ensure the future of our agricultural and fruit growing area steps should be taken as soon as possible to include at least those areas under class one in forest reserves, since in no other way can adequate protection of watersheds be secured. The following are areas of this class: (a) addition to Hat Creek forest reserve, 178 square miles; (b) addition to Larch Hills forest reserve, 30 square miles; (c) Nahatlatch forest reserve, new, 935 square miles; (d) Petee forest reserve, new, 747 square miles.

GRAZING.

The administration of grazing in this district is still in abeyance. I have talked matters over with a good many of the ranchers in the district and am inclined to believe that the objection to the proposals of this branch for handling the grazing on forest range is decreasing. Were it possible to find a good man to go into the whole question during the coming season it is probable that an understanding could be reached satisfactory to all concerned.

During the year many inquiries were received at this office regarding the possibility of securing leases on hay meadows situated far back in the reserves on the summit plateaus, for the purpose of cultivating them and feeding stock on the ground.

After discussing the matter with the director, proposed regulations were worked out to cover these meadows and the matter submitted tentatively to the leading ranchers by means, in the first instance, of a circular letter. This letter pointed out that according to the best informed ranchers the problem of development of the stock industry in this district depended upon winter feed, as there was ample summer range for twice the number of head of stock raised at present if they could be carried over the winter. It was stated that the Dominion forest reserves in the Dry Belt comprised mostly high level or rolling plateau areas which contained many natural meadows. Owing to their elevation and inaccessibility these meadows were not suitable for homesteads and at present were not put to any use. A small expenditure in draining these lands and sowing them to clover or other suitable grass would render them very productive. A study of the local conditions showed that in nearly every case it was impossible to get the hay out and that, therefore, the stock must be driven in and fed at the meadows. The trail system, it was pointed out, was so nearly complete that but little expenditure would be required to fit the trails for the driving of stock to the meadows.

The absence of suitable regulations to cover such conditions had been a drawback, since the draining of meadows and building of fences and shelters required an expenditure which must be met by a reasonable security of tenure, and hitherto the Forestry Branch had not granted leases. To meet this condition, the letter stated, it had been proposed to make regulations granting a permit for five years, renewable for two other periods of five years each, provided the conditions had been faithfully carried out. The conditions proposed were that the permittee would bring the meadows up to full bearing capacity and would maintain stock thereon at the ratio of one head of horses or cattle, or five head of sheep, for every two acres for the first three years, and the same number of stock for each acre during the succeeding years. The fees proposed were 5 cents per acre per year for the original permit, 10 cents per acre per year for the first renewal, and 15 cents per acre per year for the second renewal.

These proposed regulations have been discussed with the executive committee of the Interior Stock Association and the Nicola Valley Stock Association and have been approved by them. They have also been discussed with prominent ranchers throughout the district. The general trend of opinion is that they are workable and suitable to conditions but in order to prevent any possibility of future dissatisfaction it is intended to submit the whole matter for discussion at the general meeting of the Interior Stock Association to be held next June. Future action by the department should be guided by the recommendations of this meeting.

AGRICULTURAL LANDS.

The principal objection made to the establishment of further forest reserves in this district has been the fear of the possible inclusion of agricultural lands. This fear is the result of a statement made some two years ago that the development of the country was being retarded by the tying up of areas of agricultural lands within forest reserves. This matter has been discussed in my reports of previous years and mention made of the recommended eliminations of land of possible agricultural value. Unfortunately, owing to the war, statutory action has not been taken as yet in accordance with such recommendations, so that a somewhat anomalous condition exists with regard to such lands.

The present method of requiring action by Parliament to withdraw agricultural lands found to be included in forest reserves causes considerable delay which it would be well to obviate.

It seems reasonable to expect that, so far as lands valuable only for the production of hay are concerned, the proposed amendments to the regulations with reference to hay meadows mentioned above will afford the best solution of the utilization of such lands. Observations of the degree of development attained in cultivation of lands of this class by settlers and squatters on and adjoining forest reserves shows that in the majority of cases the outlook for these people is well nigh hopeless. Now that government work has been largely discontinued, owing to the necessity for economy in expenditure, the unequal struggle has forced many to abandon such claims and seek a livelihood elsewhere. This condition of affairs is evidence of the truth of the statement made by myself previously that the extraneous support given by government work was all that enabled settlers on such lands to remain, and that the lands themselves cannot be considered as suitable for homesteads in the true sense of the term; namely, that they enable a settler to obtain a decent living from them alone.

When we consider that at the same time there are many settlers adjacent to the reserves on lands of a better class who can make a living but are hampered from developing as they ought by the lack of adequate feed and range for their stock it seems to me self-evident that the best use for forest reserve hay meadows is to render them available for use as adjuncts to these bona fide homesteads, thus ensuring to the settlers a chance to get ahead. In this way the community can obtain one man in fairly comfortable circumstances and an asset to the district, instead of having two men both barely able to exist.

There are, however, lands within forest reserves, other than hay lands, about which there can be legitimate doubts as to their value for agricultural purposes. With the introduction of improved methods of agriculture, especially with reference to dry farming, and following the impetus given by the "back to the land" movement which is bound to come on the termination of the war it may be expected that there will be a very insistent demand for a chance to use lands within forest reserves which possess any potentialities whatsoever agriculturally. The need of preparedness for this eventuality leads me to believe that we can no longer delay consideration of the introduction of a "Forest Homestead" amendment to the Forest Reserves Act, applicable at least to British Columbia, which will provide for the disposal of agricultural lands within forest reserves in a similar way to the Act of June 11, 1906, with reference to national forests in the United States.

Two basic provisions of this amendment should be: first, the delimiting of such lands by a metes-and-bounds survey, or at least by subdivision down to 25-acre blocks, irrespective of section lines, so as to grant only bona fide agricultural lands, and, second, a regulation that upon abandonment or cancellation of any forest homestead the land in question should revert to the ordinary status of forest reserve land.

Once some definite basis for the administration of agricultural lands in reserves is arrived at I am certain that any difficulties in the way of co-operation in the carrying out of the policy of conserving our natural resources in timber and water in the best way, viz., by the creation of forest reserves, will be eliminated.

In connection with the proposed new reserves I do not think action should be taken towards establishing them pending a decision on the agricultural lands question. When this has been properly provided for a joint inspection of boundaries as proposed by the original forest surveys should be made by the Lands Branch and the Forestry Branch to ensure the correction of any mistakes made. Upon such inspection reports reserves could be established with a fair degree of certainty that they would be permanently satisfactory

FIRES.

The season of 1915 on the reserves in this district was very satisfactory from the fire standpoint. Ample and well distributed rainfall throughout the season reduced the hazard very materially. Added to this the fact that the rangers are becoming well

acquainted with their districts and the settlers therein, and more efficient in the carrying out of their duties as they get experience in the actual business of forest administration, and we can account for the fact that only six fires occurred last season costing $29 to fight. The causes of these fires were as follows: settlers clearing land, 2; brush burning, 1; campers, 1; incendiary, 1; lightning, 1. The total area burned over by these fires amounted to 106 acres. Eight thousand feet board measure of timber were destroyed and 10,900 feet board measure damaged. Thirty cords of wood were also burned.

SILVICULTURE.

Timber sale 38 was completed during the year, the whole operation having been carried out by the operator in a very satisfactory manner. Brush piling was well done and the resultant expense of burning the brush by ranger labour was therefore small, amounting to 54 cents per acre and 2 cents per thousand feet board measure.

Inquiries were received from certain parties *re* a sale of timber on the northern slopes of Chuwhels mountain in the Long Lake reserve, but owing to the financial stringency caused by the war it was found impossible to go through with the matter.

The permit business on the reserves in this district as in previous years is very light, due to the presence of quantities of accessible timber on Dominion lands near the settlements or on the lands of homesteaders themselves. Some little demand occurred for cedar on the Niskonlith reserve and most of the permits were issued for this class of timber.

During August last I made an inspection trip through the Yoho forest reserve and was much impressed with the quantity of over-mature timber in the Vermilion River valley which is in very poor condition silviculturally. The stand of timber comprises a mixture of lodgepole pine, Engelmann spruce and mountain balsam at an average mixture of 50 per cent pine, 49 per cent spruce, and 1 per cent balsam. This percentage, however, varies according to site conditions from an almost pure pine stand to an almost pure spruce stand. The average run per acre would be about 5,000 feet board measure, the timber cutting out in about the same proportion as the stand occurs on the site. The stand is, on the whole, over-mature and shows little marks of fire for a long time past. The pine, being the shorter-lived tree, is rapidly deteriorating, thereby causing a considerable percentage of dead timber in the stand. This percentage varies from 5 per cent to 25 per cent of the total stand. The cause of this dying off of the pine is probably due in the first event to the natural completion of the life cycle of the tree. Superficial inspection indicates strangulation by lichens and inability to compete with the spruce for light and moisture at maturity. Specific diseases through fungus or insects were not noted. Observations in the Ochre and Tokum Creek valleys, where better site conditions prevail, point to the conclusion that the climax forest is spruce and that the occurrence of pine is a temporary phenomenon due to forest fires in the past.

The reproduction is composed solely of mountain balsam although this species in the stand may not comprise 1 per cent. Localities where windfall has taken place show this balsam to be replaced by spruce reproduction of a healthy character. In "burns" it is replaced by lodgepole pine. The presence of balsam reproduction alone in the mature stand is due to the greater tolerance of that species. Proper light conditions being provided, reproduction of spruce can be obtained without difficulty even though clean cutting should be practised over considerable areas. The brush from logging operations will have to be piled before burning as broadcast burning would probably give rise to a crop of lodgepole pine reproduction.

Silviculturally the stands on the Vermilion river and tributary valleys are in a very decadent state and a further crop of spruce can be secured only by removing the present stand as soon as possible under proper silvical conditions.

The fire hazard is increasing year by year owing to the toppling over of dead pine in increasing numbers thereby adding to the debris on the forest floor. The presence of moss and lichens on both spruce and pine also causes a very high fire haard. The poor and comparatively valueless stand of lodgepole pine to be seen very soon after crossing the divide of the Vermilion pass on the Alberta side shows what unfavourable conditions will naturally arise in the next crop unless the fire hazard is removed. From the point of view of good forestry it is therefore imperative that cutting operations should be encouraged and carried out as soon as possible. Any timber sales awarded in this district should include a clause providing for the utilization of the dead standing pine as firewood. Owing to the scattered occurrence of this dead standing timber a charge of 25 cents per cord would be ample remuneration to the Government.

The only logical objection which could be advanced to the cutting of this timber would be possibly the marring of the scenic attraction of the Banff-Windermere automobile road. Personally I do not feel that this should have sufficient weight to prevent the proper harvesting of the present crop, especially as cutting under regulations would not leave the ordinary unsightly slashing and subsequent "burn" seen under unregulated logging conditions.

USES.

Summer Resorts.—The summer resort at Trout lake in the Long Lake forest reserve was much improved by the construction of a road along the front of the lots giving direct access to the cottages and the water front for the whole length of the site. One new cottage was erected and the grounds of several of the residences have been cleaned up and improved in a most commendable way.

FISHING.

The requirement of a permit to fish was eliminated last season, a proceeding which gave considerable satisfaction to the public without detracting to any extent from the efficiency of the control by this branch.

Further investigation of Paul lake in the Niskonlith reserve showed that owing to its low altitude (2,100 feet) it was not necessary or advisable to prohibit fishing to so late a date as June 15, as all spawning is over a month before that date. Permission was obtained to permit fishing in the lake after May 15, and a great deal of use was made of the lake by residents of Kamloops.

IMPROVEMENTS.

A large amount of improvement work was carried out during the summer season. The construction of telephone lines was an important departure in improvement work. Three lookout stations and two rangers' headquarters have been connected with this office and each other through the medium of the Public Works Department Telephone Service, whose superintendent, Mr. W. H. Stevens, has given us every assistance in his power.

One ranger's headquarters house was finished, one new one built and another partly constructed. Nine ranger's cache cabins were also constructed at strategic points on the reserve.

Trails constructed totalled 191½ miles; trails repaired 140 miles; telephone lines erected 38½ miles.

With the exception of a few projects yet incomplete and one or two not yet started but which will be undertaken next year the improvements necessary for proper protection from fire of the reserves at present established are practically completed. We should now be in a position to reap the benefit of our capital expenditure in reduced cost and increased facility of administration in the future.

SURVEYS.

The work of taking an inventory of the resources of the reserves in this district was continued during the winter season of 1915-16 by a reconnaissance party under the direction of Forest Assistant K. G. Wallensteen. The work during the past winter was confined to the Niskonlith reserve. Despite the intense cold only one day's time was lost, a very creditable record. I am informed that there is an even larger area of fine spruce and balsam timber on this reserve than was found on the Fly Hills reserve the winter before. That there are at least three hundred million feet of timber on this tract is probably a conservative estimate.

EDUCATION AND PUBLICITY.

Owing to the extreme shortage of officers on the staff of this district occasioned by the departure of the supervisor and a forest assistant to the battle front, it has been necessary to confine the energies of the remaining staff to routine work with the result that opportunities for bringing the work of the branch before the public have been few. Nevertheless some good results have been obtained by personal conversations with responsible citizens and by the writing of several newspaper articles on affairs connected with work here from time to time.

EQUIPMENT AND SUPPLIES.

During the year a large amount of fire-fighting equipment has been purchased and distributed at various points throughout the reserves, principally at headquarters and in ranger's cache cabins. It is believed that tools are now available for fighting fires occurring anywhere in the reserves with the minimum delay in transportation.

FIRE-RANGING OUTSIDE FOREST RESERVES.

Weather conditions during 1915 were rather abnormal, generally dry weather being the rule; although, except in the Coast district, rains occurred at intervals just proportioned to reduce a fire hazard rapidly becoming dangerously high.

The total number of fires occurring in the Railway Belt during the season was 459, of which only 20 or approximately 4·3 per cent caused expense.

The causes of fire were:—Unknown, 125 fires, percentage of total 27·2; campers, 124, percentage 27; settlers, 62, percentage 13·5; lightning, 44, percentage, 9·6; railways (unspecified), 32, percentage, 7; logging equipment, 30, percentage 6·6; and the following, all of which were less than 2 per cent each of the total: brush burning, 7 fires; sparks from engines, 6; cigarettes, etc., thrown from trains, 6; other known causes unspecified, 5; tramps, 4; came across international boundary, 4; incendiary, 3; Indians clearing land, 3; careless section men, 2; right of way clearing, 1; sparks from stove, 1; total, 459 fires.

The list shows that the percentage of fires whose origin is unknown is noticeably decreasing. Railways formerly responsible for the great majority of fires are credited with only 8·5 per cent, a tribute to the efficiency of the work carried out by them under the orders of the Board of Railway Commissioners, which work is supervised in the field by officers of this branch.

Following is a statement of the total losses caused by forest fires in the railway belt during the summer of 1915: Timber, $1,336.35; young growth, $2,241.50; property, $6,465; cost to extinguish, $5,632.01; total, $15,675.16.

Coast District.—A particularly trying season was encountered on the coast owing to a combination of prolonged drought and unemployment caused by hard times, which turned the attention of many to the advantage of forest fires as a means of gaining a few dollars. Great credit is due to the Crown Timber Agent, Mr. E. W. Beckett, supervisor of fire ranging in the coast district, and to his assistants, who by judgment and energy prevented dangerous situations from developing into conflagrations.

There were 295 fires; the area burned over, including merchantable timber, young growth and cut over lands was 14,738 acres, and the total damage to timber and young growth was $3,327, and to private property, logging equipment, etc., $6,325.

Fortunately, I was in a position to give a great deal of personal attention to the work in the field, and invariably I found that, after some advice, the assistant rangers were capable of coping with the situation. The chief ranger was indefatigable in his efforts to supervise the various fires, but notwithstanding his earnestness, he found the situation difficult, largely owing to poor transportation, which in the coast district might be materially improved if he were provided with a runabout automobile, enabling him to go from point to point without the delay of awaiting trains, etc.

Improvements.—During the season we completed the following telephone lines: (a) Chilliwack River line to connect with the line to Chilliwack, 13½ miles; and (b) Cultus Lake line to connect with Chilliwack, 3 miles.

The advantage of connecting these two remote districts with the outside world was apparent during the season, particularly in the case of the latter, through which prompt assistance was secured in time to prevent a serious loss of timber.

The following improvements are under way at present:—

Lillooet Lake telephone line, connecting Lillooet lakes with Port Haney, at which point assistance can be secured in time of need; distance 12 miles.

Kronin Trail, districts Nos. 17 and 18; 4 miles.

Completion of Gold Creek trail, district No. 17; 3 miles.

Dewdney Creek trail, district No. 3; 4 miles.

Yale and Spuzzum trail, district No. 1; 9½ miles.

Lookout station, trail and telephone, Chilliwack River, districts Nos. 6 and 8.

We hope to be able to complete all the above before the beginning of the season 1916, and great benefit is expected from these important projects, particularly that of the lookout station situated on Lookout mountain on the edge of the Chilliwack valley at an altitude of 6,200 feet above sea level, and affording an unobstructed view of the surrounding country in all directions.

During the season we continued to have the cordial co-operation of the Provincial Forest Branch, and a system of reciprocity has been established between the two branches, from which each must benefit.

We held two very beneficial and successful meetings of the fire rangers in the months of May and September; and our fall meeting in particular was most interesting, being attended by several mill men and loggers, whose interest is identical with that of the department.

Salmon Arm District.—This district, in which such heavy losses were encountered during 1914, escaped with an easy season this year, due to the occurrence of rains at opportune intervals and to the taking to heart by settlers and rangers of the lesson learned in 1914. Two new rangers were added to the staff bringing the total to 16.

Fifty-two fires were reported of which 12 caused expense to extinguish. It is of interest to note that lightning was the largest single cause of fire in this district, being responsible for seventeen fires. The loss of timber was very small.

Some improvement work was undertaken, principally in the opening up of trails along creeks whose watersheds contain areas of valuable timber. Altogether some 27 miles of trails were construed. A cabin was erected on the north shore of Little Shuswap lake and a marine ways constructed for wintering the fire patrol launch *Shuswap*.

A ranger meeting was held on October 5, in Salmon Arm, the principal feature being an address by the Director which was very much appreciated, as was the opportunity afforded of coming into personal contact with the head of the branch.

Revelstoke District.—Dominion Land Agent, T. J. Wadman, continued to supervise the fire-ranging work in this district in his capacity of chief fire ranger. The splendid record in fire-ranging work made in this district is largely attributable to his organizing ability and attention to details.

One new district was established in the timber berths west of Golden on the Columbia river bringing the total number of rangers to 16.

Altogether 86 fires were reported during the season, only three of which caused expense. These were extinguished before any damage was done. Twenty-six fires were caused by lightning. The large percentage of fires from lightning, approximately 31·9 per cent, shows the difficulties of adequate fire protection in this district.

The provincial regulation requiring the securing of permits by settlers before they are allowed to burn off their "slashes" is productive of good results. The chief fire ranger attributes much of this to the securing of the co-operation of the settler. He states that the effort on the part of the rangers to secure this co-operation met with most gratifying results. When the time came for the settler to burn off his brush, the ranger for that locality superintended the operation, with the result that the escape of fire into the forest was prevented and the settler reciprocated whenever possible. The chief ranger believes that the only way to secure the co-operation of the settler is to assist him on such occasions and he reports that he intends to extend this policy in the coming season. The education of the general public in the district he believes to be one of the most important and most effective parts of the work and he devotes considerable attention to it.

A large amount of improvement work was completed during the year, including the construction of 16 miles of new trail and the clearing out of 60 miles of old trail. Special attention was paid to cutting trails to convenient lookout points, four of which are now accessible and are proving very useful.

The Big Bend telephone line was put in order early in the season.

Two cabins were erected each of which serves as headquarters for two rangers. These cabins add to the facility with which the rangers can cover their respective districts.

About 600 acres of slashings were burned under the supervision of the chief ranger, eliminating some very dangerous hazards. This burning was done in the spring. Later, during the dry weather, the ranger in one district had some difficulty with fires breaking out in the area burned, from smouldering cedar logs and debris, especially material used by the operator as "fills" in skidding roads. All outbreaks were promptly controlled but the experience gained points to the advisability of fall burning when possible.

A very instructive rangers' meeting was held in Revelstoke at the close of the season on October 9, 1915. The experiences of the season were gone over and points of value in the work correlated therefrom. A discussion on fires caused by lightning showed that a recurrent cycle of phenomena could be traced for electric storms in each district, from a study of which protective plans could be evolved. Wind directions and the conditions giving rise to dangerous fire winds were also discussed.

Ranger Hugh Smythe of Revelstoke produced a collection of seeds of native trees of the district to be forwarded to France to be planted by the graves of fallen Canadians. In connection with this collection the following resolution was passed: "This

meeting respectfully requests the Director of Forestry to forward the collection of seeds of Revelstoke trees collected by Ranger Smythe to the Minister of Militia with the request that these be forwarded to the proper persons in France who will undertake to plant them on the graves of Canadian soldiers fallen in the defence of the Empire."

RAILWAY FIRE-RANGING.

Supervision of railway patrols under Order 107 of the Board of Railway Commissioners was continued in 1915 with the same staff as formerly. The good results obtained under this order show forth in the reduced proportion of fires mentioned above as charged against railways. This is due, first, to the use of oil-burning locomotives through timber districts; second, to the splendid way in which the rights of way have been cleaned up, and, third, to the care exercised by railway employees in fulfilling their duties with regard to fire prevention as outlined by the Board.

Patrols were established on the Kettle Valley railway under authority of Order 107 on July 21 and proved effective.

A study of conditions along the Canadian Northern Pacific railway was made last fall and recommendations made to the Railway Board of the patrols necessary as soon as that railway should come under the jurisdiction of the board.

D. ROY CAMERON,
District Inspector of Forest Reserves
for British Columbia.

APPENDIX No. 6.

This report concerns the progress of work in the Forest Products Laboratories of Canada for the year ending March 31, 1916.

INTRODUCTION.

The basis of organization of the laboratories and their early development were discussed in last year's report. A good deal of time has again been spent in fitting up our buildings for laboratory work and in the installing of apparatus. However, there has been a decided improvement in the way of getting down to more regular experimental work, which is the most important activity of a government office such as this. The effect of the war has been keenly felt in the way of absence of men enlisting for active service, difficulties in procuring apparatus and supplies, uncertainty and changes in the industries with which we make an effort to co-operate. On the other hand there has been a very marked change in attitude towards scientific work on the part of the Canadian public and the experience of the war will no doubt considerably hasten the development of industries on a sound technical basis.

Library accessions for the year totalled 656 including books, pamphlets, clippings, reports, government bulletins, etc. The total number of books on hand is 461, being an increase of 216 for the year. In addition to the above, 34 technical journals have

been received and indexed regularly. The McGill library is relied on for general reference works and we are not attempting to duplicate to any extent. Improvements in the library filing system have been made and an order covering the details has been prepared. Special attention has been given during the year to the referencing of current literature and standard works on pulp and paper, wood distillation, timber tests, cellulose, tannins and a number of other subjects. Systems of indexing photographs and exhibits have been worked out.

A favourable start has been made on the exhibits of forest products. One large room has been remodelled for the purpose and a few special cases and shelves, etc., have been provided. A considerable number of specimens have been collected, illustrating wood-destroying fungi, wood treated with preservatives, timber test specimens, materials used in the pulp and paper industry, etc. A number of forestry pictures have been framed with a variety of Canadian woods. Some fifty-seven Canadian tree species have been procured in the form of logs which are being used for the preparation of wood specimens for exhibit and for distribution. Considerable attention has been given to the working out of best methods for preparing these specimens. An exhibit was prepared for the annual meetings of the Canadian Lumbermen's Association and the Canadian Forestry Association at Ottawa in January.

TIMBER PHYSICS.

Improved accommodation has been provided for this division. In the draughting room a special bench has been installed for the determination of physical properties of wood, a small room has been fitted up for microscopic work and the photographic room has been equipped with benches, drawers, etc. The chemical laboratory has also been supplied with extra benches, shelves, desk and other fittings and a storage room for chemical apparatus has been provided.

The new equipment added during the year includes two electric ovens, photographic apparatus for printing and miscellaneous apparatus and supplies for microscopic, photographic and chemical work.

The attention of this division has been devoted mainly to the determination of physical and structural properties of wood which has undergone mechanical test in the Division of Timber Tests. This work is discussed in more detail elsewhere. The miscellaneous work done by this division includes a preliminary study of "rotholz," new selective stain for pulp fibres, examination of discoloured birch, identification of fibres and wood submitted by outside parties, the preparation and distribution of 183 special fibre slides, the study of fibre dimensions of Douglas fir, examination of wood for fungus, etc. The work of the division may be summarized as follows:—

Moisture determinations, 4,254; structural characteristics, 1,646; shrinkage (radial and tangential), 373; specific gravity and volumetric shrinkage, 422; permanent microscopic slides, 579; duplicates of above, 2,052; temporary slides prepared and examined, 560; wood identifications, 67; fibre identifications, 39; fibre measurements, 2,900; photographic prints, 1,021; lantern slides, 317; negatives, 524; (including copies, 203; photomicrographs, 144; ordinary photographs, 177.)

TIMBER TESTS.

A wood-working shop has been fitted up in the building adjoining the experimental paper-mill. This provides good facilities for general carpentry work and the preparation of specimens. A small shed for the seasoning of specimens has also been constructed. In addition to the above there is available an office, draughting-room, the university testing laboratory, a storage and seasoning yard and a small saw-mill for handling logs.

New equipment installed during the year includes thickness planer, surface planer, saw table, borer, lathe, grinder, trimmer, swing cut-off saw and coring machine in the new wood-shop. The university Riehlé testing machine has been fitted with new motor and gears thereby adding another unit for timber testing.

Most of the time during the year has been spent in the testing of Douglas fir and Nova Scotia mine timbers. These topics are discussed under separate heads. A certain amount of miscellaneous testing has been carried out to compare the relative strength of green and kiln-dried wood, to determine the relation of moisture content to strength on a series of Douglas fir specimens, and to get an idea of the strength of wood showing "rotholz." These miscellaneous tests totalled 164 in number.

Some attention has been given to the planning of future work. There is a call for test data on Douglas fir in large structural sizes. It would be of interest to the railroads to know more accurately the strength of ties and bridge timbers treated with preservatives. When time permits, a series of runs will be made to study the effect of rate and method of loading specimens in the testing machines on the strength values recorded.

PULP AND PAPER.

The experimental paper-mill was placed in better working order during the year by the installing of further equipment and the making of a good many improvements. The upstairs laboratory was fitted with balance room, draught closet, extraction chamber, benches, laboratory table, special racks, etc., for chemical work on wood and pulp.

Among the new items of equipment may be mentioned a 47-inch pulpwood chipper, chip screen, pulp-drying oven, two gas-fired steam boilers, electric meters in connection with the beaters, autoclave for making soda pulp, small digester for making sulphite pulp, miniature beater, soda liquor tank, gauge tester, drum washer for beater, plunger stuff pump, suction pump, chemical balance, two electric ovens and various testing instruments.

Progress has been made on the special investigations of waste sulphite liquor, beating, blotting paper, pulpwood measurements and the chemistry of wood and pulp. These subjects are discussed elsewhere in this report. The first sheet of paper was run over the experimental paper machine on May 27, 1915, and the paper-making equipment has been operated at intervals during the year. The staff has been called upon to carry out miscellaneous tests such as the beating of leather-board stock, the examination of pulp fibres submitted, bleaching tests, testing of Canadian china clay. Further attention has been given to the design of semi-commercial pulp digesters and the lay-out of an experimental pulp-mill, so that this equipment can be added when conditions permit.

WOOD PRESERVATION.

The laboratory accommodation for the Division of Wood Preservation has been greatly improved. The preservation laboratory has been provided with concrete floor, chemical benches, office and fairly complete equipment for the study of wood preservatives and the preservative treatment of wood on a large experimental scale. In the pathological laboratory one small room has been put in shape for the study of wood-destroying fungi and the adjoining room has been altered to serve as a fungus pit. This division also has an office and storage rooms.

Considerable time was spent in the designing and installing of apparatus for experimental work, including a cylindrical retort, 2 by 10 feet, with oil working tank, motor-driven circulating pump, high pressure feed pump, air compressor, air receivers, condenser, etc. There is also a small retort, 13 by 18 inches, with the necessary attachments. Other apparatus added during the year includes open treating tank, chemical apparatus, incubating oven, inoculating cabinet, electric oven, etc.

There has not been an opportunity for very great progress in experimental work during the year. The special investigations of railway ties, paving blocks, fence posts and durability of wood are discussed under separate heads. Miscellaneous work has included distillation runs on various creosotes used as wood preservatives, the examination of decaying timber in factory buildings, the collecting of fungus specimens, the study of technical literature and experimental work on the effect of fungus attack on wood.

MISCELLANEOUS WORK.

The subject of lumber continues to be one demanding a great deal of attention, and I again urge the establishment of a separate Division of Lumber at the earliest opportunity. There are many problems confronting the wood-using industries in connection with logging and sawing of lumber, the disposal of wood waste, the proper balancing of finished products and the development of new lines of manufacture. Some attention has been given to these questions by members of our staff and many inquiries have been answered to the best of our ability. There is an urgent need for a better understanding by lumber dealers and wood users of the proper methods of handling wood to prevent decay and improved methods of constructing buildings to cut down the fire risk.

Among our miscellaneous activities it may be interesting to note that an attractive "sugi" finish has been produced on Douglas fir by charring the surface with gas flame and scraping with wire brush, the results comparing favourably with the widely advertised "sugi cypress."

Hardwood distillation has been greatly stimulated by the war demands for acetone and other products. Our staff has been called upon to answer a large number of inquiries regarding this industry. Available literature on the subject has been reviewed and some important foreign works translated. The distillation of resinous woods is attracting a good deal of speculative interest in Canada, and there have been calls for more accurate information concerning experience in other countries and possibilities for developing the industry in Canada.

Along with regular work in the four technical divisions now operating, the members of the staff have given such time as possible to keeping in touch with miscellaneous industries and developments in the field of forest products. Among these may be mentioned the recovery of tannins from bark and wood, the production of cedar oil and other essential oils from leaves and wood, the manufacture of wood flour, production of rosin and turpentine, etc.

SPECIAL INVESTIGATIONS.

The following is a brief summary of the special investigations which have been undertaken:—

Testing Clear Specimens.—This is a comprehensive investigation to provide reliable data on the mechanical, physical and structural properties of wood and is designed to include ultimately all the important Canadian tree species. Test specimens are of rather small sizes and are cut in such a way as to be free from defect. The mechanical tests are static bending, impact bending, compression parallel to grain, compression perpendicular to grain, hardness, shear, cleavage and tension perpendicular to grain. In addition such physical properties as moisture content, specific gravity, volumetric and linear shrinkage, per cent sapwood, per cent summerwood, rate of growth, fibre length and microscopic structure are determined.

The testing of Douglas fir from three localities in Alberta and British Columbia was completed some months ago. In the course of the work on this species there have

been made 3,694 mechanical tests, 405 shrinkage determinations, 4,099 moisture determinations and some 1,794 determinations of sapwood, summerwood, rate of growth, etc. During the fiscal year 1915-16 the mechanical tests numbered 2,663 and the other tests were in approximately the above proportions. It appears that Canadian-grown Douglas fir has substantially the same properties as that grown in the United States and that Douglas fir, particularly from the Pacific Coast region, holds one of the highest places among structural timbers. The results of this investigation are now being worked up for publication in the form of a Forestry Branch bulletin.

Our forester has collected the necessary logs for the testing of four eastern species; black spruce (including the so-called "grey spruce") and white spruce from Quebec province and white pine and red pine from Ontario. Owing to the pressing demands from lumbermen, architects, engineers and others for authoritative test results on the various Canadian woods suitable for building construction, it has been thought best to shorten the programme of testing so that each species can be finished in from one to two months, until reasonably accurate average strength values have been obtained for the more important Canadian wood species.

Nova Scotia Mine Timbers.—A general investigation of the use of wood in the mines of Nova Scotia has been carried on co-operatively by the Forestry Branch and the Mining Department of McGill University. The Forest Products Laboratories have been engaged in the mechanical testing of the timber, the study of fungus attack, the consideration of preservative treatment, etc.

The testing of a preliminary shipment of 288 props and booms of commercial sizes from the storage yards of one of the eastern mining companies was completed early in 1915. It became apparent that in commercial operations rotting of timber in storage is quite prevalent and it was found that some of the material affected by fungus attack was as much as 30 per cent weaker than the sound sticks, even though decay was not evident from the general appearance of the timber. Additional shipments of some 540 props and booms which were cut from sound trees by our forester were received later and of these 270 were tested green last summer. The remaining 270 have been seasoning in our yards for a year and will be tested in the air-dry condition during the coming summer. The species covered are black spruce, red spruce and balsam fir which are now being used in the coal mines of the east, and yellow birch, white birch and jack pine which have been suggested to supplement the supply. Props were tested in 6-foot lengths as columns, and booms were tested as beams on a span of 12 feet. In addition 307 tests were made in compression parallel to grain on small clear specimens cut from the booms after they had been broken. The booms showed the following descending order as to strength: yellow birch, white birch, black spruce, red spruce, jack pine, balsam fir. The prop tests indicate that crooks and defects have more to do with the strength of individual props than has the species to which they belong. The results will appear later in a Forestry Branch bulletin.

Vapour Pressure and Shrinkage.—Plans were made some time ago for studies of the variation in the moisture content of wood due to changing humidity of the atmosphere at various temperatures and the relation between shrinkage of wood and change in moisture content. Special apparatus was designed and procured and some preliminary experiments were made. The investigations had to be postponed owing to the enlisting of technical men for active service.

Waste Sulphite Liquor.—Research work was started last summer by Mr. J. A. McRae at Queen's University on the chemical characteristics and composition of waste sulphite liquor. This is a very difficult field of research and it appears that more ample provision will have to be made if results are to be expected which will point to a satisfactory utilization of this pulp-making by-product. An extensive set of abstracts of the technical literature has been prepared.

Beating.—The object of this investigation is to study the factors connected with the proper beating of paper pulp. During the year the single and double experimental beaters have been put into shape and plans have been made for carrying out the work. Progress was delayed by the assignment of several members of the staff to special war work and other duties.

Ties.—This investigation is intended to cover the problems relating to preservative treatment of railway ties under Canadian conditions. The plans include experimental treatment of tie timber and service tests of treated ties in track. A considerable amount of preliminary work has been completed during the year and the problem has been taken up in co-operation with officials of the Canadian railroads.

Acetone.—Several of the chemists on our staff have devoted considerable time during the past months to the study of acetone which is required in such large amounts for war purposes. We have co-operated with the hardwood distillation companies and the cordite manufacturers in producing and testing new solvents. Most encouraging progress has been made and the results have been submitted regularly to representatives of the British War Office.

Blotting Paper.—Some attention has been given to the manufacture of blotting paper, as only small quantities of the cheaper grades are at present made in Canada. Samples of blotting paper from various foreign sources have been examined. A satisfactory procedure was worked out for the treating of cotton and linen rags and very good grades of blotting paper have been produced on the experimental paper machine. Several thousand of these sample blotters have been printed and distributed as fire protection notices through the Dominion forest reserves and other parts of the country.

Pulpwood.—The object of this investigation is to study the feasibility of barking, chipping, drying and baling pulpwood near the logging operations and shipping the bales to the mills for the manufacture of chemical pulp. In connection with this work it was necessary to determine such data as average weight, green and dry, of a cord of rough pulpwood, loss on rossing, weight of a full cord of peeled wood, volume of solid wood per cord, yield of good chips from a cord of pulpwood, weight of chips loose and packed per cubic foot, weight of air-drying of chips, shrinkage on drying, etc. This information should be of practical interest to the pulp and paper industry.

Preliminary baling experiments have been made and this problem together with the commercial drying of pulpwood chips is in the hands of one of the companies with whom we are co-operating.

Potash.—Owing to the cutting off of German supplies of potash for fertilizer and industrial purposes, attention has been turned to the old process of recovering potash from wood ashes. Information has been obtained and a number of analyses have been made. The total amount of potash in the wood ashes produced throughout the country is not very great, but several firms are taking the opportunity for recovery during the present period of high prices.

Chemistry of Wood and Pulp.—The object is to study the chemical characteristics of Canadian pulp woods with special reference to their pulp-making qualities. A special laboratory has recently been provided. The work up to the present has been along the lines of comparing methods of analysis and devising new methods for the determination of cellulose, lignin, resin and other constituents of wood and pulp. Studies are being made of pulp produced in small digesters, special attention being given to spruce and balsam fir.

Paving Blocks.—The merits of treated wood-block paving for city streets and factory floors and the abundance of raw material in Canada point to a greatly extended use of wood for paving purposes in the future. These laboratories have in mind a

continuous investigation of this subject, involving experimental preservative treatment of wood-block material and service tests of treated blocks. Considerable information has been gathered and a general discussion was given in Forestry Branch Bulletin No. 49, "Treated Wood-block Paving." A number of inspections have been made of wood pavements in Canadian cities during the past year. A supply of red pine has been procured for laboratory tests on this promising species.

Fence-posts.—Preservative treatment of fence-posts promises to be of considerable importance in some districts of Canada where local post material is limited in supply and inferior in quality. The proposed work of these laboratories will cover the investigation of simple, cheap methods of treatment which can be applied by farmers and other consumers of post wood. This subject is of chief interest to the Prairie Provinces and it is intended to co-operate with the forest reserve officials. A small supply of Russian poplar posts has been secured for test purposes.

Oils for Ore Flotation.—The mining interests recently requested the co-operation of these laboratories in the production of Canadian wood oils which may be suitable in the new and important flotation process for treating low grade ores. The Mines Branch has arranged to make flotation tests on oils submitted. Plans are being made for the study of resinous wood distillation and other processes which may yield oils on a commercial basis for flotation purposes.

Durability of Wood.—The lack of definite information regarding the natural durability of the important commercial species of Canadian woods is a handicap in selecting timber for various structural purposes. Plans are now in hand for a study of the relative durability of a few Canadian tree species. This work will include accelerated rotting tests of wood specimens and other laboratory studies to determine susceptibility of untreated woods to fungus attack.

PUBLICATIONS.

Forestry Branch Bulletin No. 49, "Treated Wood-block Paving," was printed and distributed early in the year.

The following articles by members of the staff appeared during the year:—

"The Chemistry of Paper-making Fibres," by J. S. Bates (read before Technical Section of Canadian Pulp and Paper Association and published in Pulp and Paper Magazine of Canada, July 1, 1915.)

"Structure of Wood and some other Fibres as related to Pulp and Paper," by H. N. Lee (read and published as above.)

"The Work of the Forest Products Laboratories," by J. S. Bates (published in Canadian Forestry Journal, July, 1915.)

"Report on the Forest Products Laboratories," by J. S. Bates (published in the Proceedings of the Royal Society of Canada, 1915.)

"Chemical Analysis of Wood Pulps," by B. Johnsen (read before Technical Section of Canadian Pulp and Paper Association and published in Pulp and Paper Magazine of Canada, December 1, 1915.)

"Wood as a Paving Material," by W. G. Mitchell (read before Canadian Lumbermen's Association and published in Canadian Engineer, March 9, 1915.)

"Coal Tar and Oil Tar Creosotes," by W. G. Mitchell (published in the Canadian Engineer, February 24, 1916.)

"The Experimental Wood Preservation Laboratory of the Forest Products Laboratories of Canada," by W. G. Mitchell (Wood-Preserving, April-June, 1916).

Articles on preservative treatment of timber and on paper-making fibres, etc., were also prepared late in the year for publication in technical journals. It is planned to give more attention to publication of bulletins and articles during the coming year. A committee on publications has recently been appointed.

PUBLICITY.

The formal opening of the Forest Products Laboratories of Canada took place on December 3, 1915. Over fifty guests were present including government officials, university representatives, lumbermen, pulp and paper manufacturers, engineers, foresters and others. The various departments were open for inspection and the formal exercises were conducted by the Honourable W. J. Roche, Minister of the Interior.

During the year some three hundred visitors specially interested in wood-using industries and conservation have come to the laboratories to see the work which is being carried on.

About fifteen lectures and addresses have been given during the year by members of the staff. These have included discussions of the experimental work being carried on in the Forest Products Laboratories, and the reading of technical papers on wood fibres, pulp and paper, wood preservation, timber testing, anatomy of bark, dry rot in timber, Canadian tree species, etc.

A good deal has been accomplished in the way of co-operation with railroads, wood-using industries, trade organizations and scientific societies. The superintendent has served as chairman of the technical section of the Canadian Pulp and Paper Association and has been appointed member of the Committee on Uses of Wood in Building Construction of the National Fire Protective Association, member of the Committee on Publicity of the American Wood Preservers' Association and member of the Council of the Society of Chemical Industry. Members of the staff have attended meetings of various associations and societies in Montreal and elsewhere.

INFORMATION FURNISHED.

An important function of the laboratories has been the answering of inquiries regarding woods and their uses. About two hundred such reports were prepared during the year.

In the field of timber physics these covered such topics as identification of fibres and wood, shrinkage of mine timbers, resin content of wood, relative weight of woods, sugar in various maple species, physical properties of woods, and fibre characteristics; in the field of timber tests strength values of various Canadian woods, test results on Douglas fir, working stresses of wood species for structural purposes, effect of creosoting on strength; in the field of pulp and paper the bleaching of ground-wood pulp, uses for barker wastes, cost data on pulp manufacture, processes for making chemical pulp, by-products of pulp manufacture, the chipping and baling of pulpwood; in the field of wood preservation the creosoting of fence-posts, treating silo timber, sources of creosote oil, preservative treatment of poles, cross-arms, mine timbers, paving blocks and wharf timbers, the protection of lumber in storage, fire-retarding paints, dry rot in export lumber, decay in factory floors, kyanizing process, specifications for paving blocks.

There have also been calls for information on hardwood and resinous wood distillation, tannins from bark of various species, cedar oil, producer gas from wood waste, poplar for box shooks, potash from wood ashes and other subjects.

JOHN S. BATES,
Superintendent.

PART VII

IRRIGATION

REPORT OF THE SUPERINTENDENT OF IRRIGATION.

This report of the Irrigation Branch for the year ended March 31, 1916, comprises brief reports by myself and by F. H. Peters, C.E., Commissioner of Irrigation and Chief Engineer, under whose immediate supervision most of the work was conducted.

My own report is merely a general review of the work of the year, with some discussion of the development of irrigation farming and of a few of the more important phases of the work of the branch, while Mr. Peters has briefly summarized the several features of the work; it is understood that separate reports will be published covering the more important surveys and inspections made during the year, and that the stream measurement data will be published as heretofore.

The grain crop of the Prairie Provinces for 1915 was the most bountiful so far recorded, and the yield was particularly heavy in southern Alberta and southwestern Saskatchewan where, in 1914, the severe drought caused an almost complete crop failure. It is not too much to say that last year's crop in these districts was the equivalent of two, and in some instances three, average crops. Yields of 50 bushels of wheat per acre were common, and 60 and even 70 bushels per acre were by no means rare. Summer-fallowed land as usual produced the best crops, but even the haphazard and slovenly farming methods which are unfortunately too common produced results that in an ordinary year would have been considered remarkable.

As usual, this bountiful harvest has already brought prominently to the front those who assert that irrigation in these districts is not required. The evidence seemingly tends in exactly the opposite direction. The soil is unquestionably fertile, but, even with rich soil and long, sunshiny days, there was an almost complete crop failure over a wide extent of country in 1914, while the same soil in 1915, with about eight inches more rainfall distributed throughout the growing season, gave a bountiful harvest. It may be, and doubtless is, true that good grain crops can be produced in these districts in most years without irrigation, if modern farming methods are carefully followed. But the record of past years points to the periodical recurrence of dry years with complete or partial crop failure, and continuous grain farming under such conditions is the least profitable form of agriculture; it inevitably results in soil impoverishment, and can therefore be looked upon only as a temporary expedient. As compared with mixed farming, where practicable, grain farming (or grain mining) has little to commend it. And mixed farming in the dry belt is possible only when irrigation water is available for the raising of forage crops for the feeding of live stock.

Mixed farming, or rather the growing of diversified crops in combination with live stock, preserves soil fertility, is profitable and interesting, and tends towards the building up of permanent farm homes and creating in the farm boys and girls an interest and pride in their homes and occupations which they entirely miss on a grain farm. The permanent settlement and prosperity of the dry belt is largely dependent upon the fullest possible development of irrigation, and therefore engineers of the Irrigation Branch have, during the past few years, devoted most of their time and energy towards the investigation of all possible sources of water supply and the survey and location of canal systems to fully utilize such supply to the best possible advantage. It is unfortunately true that the area of land requiring irrigation far exceeds the available water supply, but the feasible irrigation projects are so situated

that there is possible a combination of irrigated and dry farming that will eventually reclaim and render profitable a very considerable proportion of the dry belt where ordinary farming methods have heretofore been far from successful.

THE DEVELOPMENT OF IRRIGATED FARMING IN CANADA.

Irrigated farming was begun on a small scale in southern Alberta about twenty-five years ago in connection with the cattle industry. The earliest attempts were somewhat crude, and consisted chiefly in the wild flooding of natural hay meadows and in the growing of garden truck. The enactment of the first Canadian irrigation law in 1894 gave irrigation its first impetus, and this was largely due to the personal influence and effort of Mr. J. S. Dennis who, as the first Commissioner of Irrigation, administered the law during the first eight years after its enactment. During this period the principal development took place in the foot-hills country around and south of Calgary, and it is rather curious to note that in more recent years a great many of these earlier projects have been abandoned.

In some cases abandonment has been due to insufficient water supply. No records of stream flow were available in those early days, and there was insufficient knowledge of the quantity of water required to properly irrigate a given area of land. The result was that while usually there was ample water for domestic and stock purposes there was seldom enough for irrigation in dry years, and that was the only time irrigation was necessary.

Another, and perhaps the chief, cause of abandonment was the occurrence of several unusually wet years, beginning with 1897, which, following a long succession of dry years, led many to believe that the climate was changing for the better as a result of settlement and development. This belief persisted until about 1910, and during this period many promising irrigation projects were abandoned. But the severe drought of 1910, followed by the still more adverse conditions of 1914, have probably convinced most of the settlers that man's puny efforts in the way of settlement and cultivation of the soil, while making possible a fuller utilization of the rainfall, have little or no effect on its volume or seasonal occurrence.

During the first few years after the passing of the Irrigation Act in 1894, surveys were made under the direction of Mr. Dennis to determine the feasibility of utilizing the waters of some of the larger streams in southern Alberta for the irrigation of large tracts of land which were seemingly well adapted for that purpose but which up to that time had been used only for grazing. Three such projects were located and surveyed in sufficient detail to demonstrate their entire feasibility. It is interesting to note that two of these projects have since been constructed and are now in more or less successful operation, while the third is now under construction, and that in each instance the development of the project followed very closely the lines of the original surveys.

THE ALBERTA RAILWAY AND IRRIGATION COMPANY'S PROJECT.

The first of these projects to be developed was that of the Alberta Irrigation Company, subsequently known as the Canadian Northwest Irrigation Company, and later as the Alberta Railway and Irrigation Company, now controlled by the Canadian Pacific Railway Company and operated as the "Lethbridge section" of that company's several irrigation projects.

Authority for the construction of works was granted in 1899, and in 1900 separate authorization was issued for the construction of works for the utilization of water from several distinct sources of supply. These applications were subsequently merged

and in October, 1902, a further or consolidated and amplified authorization was issued for the construction of a system of works designed to utilize water from St. Mary and Milk rivers and several of their tributary streams, for the irrigation of the irrigable portion of a tract comprising some 500,000 acres of land in the district surrounding and south of Lethbridge, Alta. A period of fifteen years from the 23rd October, 1902, was granted for the construction of the necessary works.

Actual construction work was begun in 1899, and by the end of the year 1900 water from St. Mary river was delivered at Lethbridge. Subsequent development proceeded as rapidly as the settlement of the district warranted, and to-day, although the period allowed for the completion of the works has not expired, the main canal system is practically completed and a considerable proportion of it has been in successful operation for about fifteen years.

The works as they stand to-day consist of 200 miles of main and secondary canals, not including farm laterals, the capacity of the main canal being over 1,000 second-feet. The system has cost $1,368,000. There are approximately 130,000 acres of land irrigable from the present works, and some 75,000 acres have actually been irrigated. The number of water users is at present 635. The annual water rental, or maintenance charge, is equivalent to $1 per irrigable acre. The present system of works is susceptible of considerable expansion, but further development is dependent to some extent upon the availability of the necessary water supply, the main sources of supply being international streams and subject to a treaty between Canada and the United States providing for their joint use for irrigation and power by the respective countries. The division of the water under treaty provisions is to be made under the direction of the International Joint Commission, consisting of six members, three for each country. At a meeting held at St. Paul, Minnesota, in May, 1915, the commission heard the evidence in the case but has not yet handed out its decision.

WESTERN SECTION, CANADIAN PACIFIC RAILWAY COMPANY'S IRRIGATION PROJECT.

The second of the large projects investigated by government engineers demonstrated the feasibility of utilizing water from Bow river for the irrigation of a large tract of land extending eastward from Calgary, Alta., along the main line of the Canadian Pacific railway.

The charter of the Canadian Pacific Railway Company entitled it to a grant of 25,000,000 acres of land, to be selected in alternate sections within a belt 24 miles on either side of its line of railway. The company had a right to reject any land not fairly fit for settlement, and had refused to accept as part of its grant any land between Moosejaw and the Rocky mountains. Selections in lieu of the land so rejected were made elsewhere, but at the time of final settlement there was a balance of about 3,000,000 acres due to the company, and it agreed to take the land comprised in this proposed irrigation project, provided it was allowed to take it en bloc. The selection being approved and the lands transferred, the company made further surveys to verify and complete the work previously done by government engineers, and also applied for permission to construct a system of irrigation works and for a water right.

The land selected by the company comprises about 3,000,000 acres in an irregular block of about 125 miles east and west by some 50 miles north and south.

Authority for the construction of the works was issued on the 21st April, 1904, and a period of fifteen years was granted for the completion of the work. For convenience of administration the company divided this large block of land into three sections, known as the western, central and eastern sections, of approximately equal area.

The western section was developed first. Water is taken from Bow river within the limits of the city of Calgary and carried to and through a tract comprising some 600,000 acres, of which about 223,000 acres are irrigable. The westerly limit of the

irrigable land is about 10 miles east of Calgary, and the easterly limit is approximately 45 miles farther east. The works comprise a diversion weir and headgates at Calgary, a main canal 16 miles in length with a capacity of 2,260 second-feet, and secondary canals and laterals with a total length of 2,484 miles. The total cost of the constructed works has been $4,287,000. The number of water users is 1,738. The annual water rental, or maintenance charge, is 50 cents per irrigable acre.

The works have been in partial use since 1908, but development has been retarded by serious difficulties between the company and some of the water users; these have now been satisfactorily adjusted and the further settlement and development of the district should be rapid.

CENTRAL SECTION.

It was originally the company's intention to irrigate this section by extensions of the canal system which serves the western section. This district is, however, because of its topography, somewhat less well adapted to irrigation than either of the other sections, and its development has been postponed to a later date.

EASTERN SECTION.

Water for the eastern section is taken from Bow river at a point known as the "Horseshoe Bend," about three miles south of Bassano, Alta. The works consist of a concrete spillway dam of the Ambursen type, 720 feet long, to which is joined an earthen embankment 7,180 feet long, by which the level of the river is raised 50 feet. Water is diverted through five steel sluice-gates into the main canal and thence by an elaborate system of canals, reservoirs, flumes, etc., is distributed throughout the tract to be irrigated.

The works consist, in addition to the dam and intake, of 2,500 miles of canals and ditches and a reservoir with a storage capacity of 186,000 acre-feet. There are about 400,000 acres of irrigable land, of which approximately 8,000 acres have so far been irrigated. The number of water users is 67. The cost of the works has been $9,440,000.

The annual water rental, or maintenance charge, is $1.25 per irrigable acre, but the water contracts provide for a reduction to 75 cents per acre in the event of the water users forming associations and taking over the maintenance of the works and the distribution of the water within their own districts, in which case the company's responsibility will be limited to the maintenance of the main canal systems and the delivery of water at the upper end of each water district. No such associations have yet been formed, as this section has only recently been opened for settlement and, in fact, no water rental has yet been charged although two or three small colonies of settlers have been supplied with water for two years.

The works in this section are of the most modern type and practically all the structures are of reinforced concrete. The land is well adapted to irrigated farming, and it is expected that the district will eventually be one of the most thickly settled and prosperous in the province. Immediate development, however, will probably be retarded by conditions arising from the war.

SOUTHERN ALBERTA LAND COMPANY.

The third of the projects previously referred to as having been developed by government engineers, takes water from Bow river just south of Carseland at a point about 30 miles southeast of Calgary. Water is taken from the river by means of a diversion weir and headgates through a main canal about 44 miles in length to a

reservoir known as "Lake McGregor" which is capable of storing 300,000 acre-feet of water. The water is then taken from the south end of the reservoir for a distance of 47 miles to the westerly limit of the tract to be irrigated and thence distributed throughout the tract.

The constructed works, other than the dam and reservoir previously referred to, consist of some 300 miles of canals and a smaller reservoir with a capacity of 30,000 acre-feet, several flumes and two wood stave syphons, one of which (not completed) carries the water across Bow river to the easterly portion of the tract to be irrigated. The works so far constructed have cost a little over $5,000,000. No land has yet been irrigated.

The tract to be irrigated comprises some 442,000 acres, including 380,000 acres purchased from the Crown subject to irrigation conditions. The irrigable area is approximately 153,000 acres. The works are not yet completed, and further construction work has been temporarily abandoned owing to financial difficulties due, in part at least, to conditions arising from the war. The company is making every possible effort to raise additional funds in order to complete the works to a point that will permit of the actual irrigation and development of the most westerly unit of the tract, comprising approximately 21,000 acres of irrigable land. If funds for this purpose can be obtained, it is the company's intention to develop this westerly unit and put it on the market, and to defer the completion of the remainder of the canal system and the development and sale of the remainder of the irrigable land until the first unit shall have been sold and settled.

CYPRESS HILLS DISTRICT.

Following the earlier development of small irrigation projects in the foot-hills region of southern Alberta, the next important development occurred in the Cypress Hills district of southwestern Saskatchewan and southeastern Alberta, beginning about 1908 and continuing for three or four years. This region had from its earliest settlement been devoted almost exclusively to cattle raising, to which it was admirably adapted because of the numerous small streams flowing from the hills and the shelter afforded by the deep valleys and coulees. The transition from range to farm was in no respect different from the changes which have taken place elsewhere in the West as settlement advanced. The earlier farmers, or those of the cattlemen who turned to farming as an adjunct to cattle raising, found irrigation necessary for the growing of winter forage for their stock, and gradually extended their farming operations as advancing settlement encroached upon the free range.

Settlement usually followed the stream valleys, and the diversion of water for the irrigation of the stream bottoms was easy and comparatively inexpensive. Unfortunately, in a good many cases more attention seems to have been given to the purchase of land under the irrigation system and the filing of applications for water rights than to the early construction of works, and in many cases the works actually constructed were not of the most suitable and durable type. This slow and to some extent unsatisfactory development is partly due to unfavourable conditions beyond the control of the settlers. The life of a pioneer prairie farmer is not altogether a bed of roses. The building of a home, the breaking and fencing of the land, the purchase of farm machinery and stock, and the maintenance of a family until crop returns begin to come in, keep the average man so fully occupied that he has little time and less money to devote to the construction of irrigation works, even though he may clearly enough realize that such works will eventually prove to be his most profitable investment. This is simply an illustration of the fact that a poor man is seldom able to utilize his natural advantages as fully and satisfactorily as his more fortunate neighbour who has some spare cash. And the average pioneer farmer seldom has money enough, and usually has to pay ruinous interest if he is fortunate enough to be able to borrow.

Notwithstanding these disadvantages, material progress, although not very rapid, is being made in irrigation development in this district. There are some ninety-three irrigation projects in this district, comprising some 28,000 acres, but by no means all of this area has as yet actually been irrigated.

Careful investigation by engineers of the Irrigation Branch indicates that there are about 40,000 additional acres susceptible of irrigation on the southern slopes of the Cypress hills in the valleys of Lodge and Battle creeks, and the Frenchman river. No reliable estimate has as yet been made of the area susceptible of reclamation on the northern slopes, as the streams there are smaller and reservoiring facilities less promising.

Several excellent reservoir sites have been located and partially surveyed on the southern slopes of the hills. These are believed to be sufficient to conserve most of the flood waters of Lodge, Battle, and Middle creeks, and the Frenchman river, and their numerous upper tributaries, and to render possible the irrigation of most of the 40,000 acres to which reference has previously been made. The cost of constructing these reservoirs is, however, prohibitive in so far as the settlers themselves are concerned, although quite reasonable in comparison with the resultant advantages, and there is little prospect of their being constructed for some time to come unless with governmental assistance, which under existing conditions is improbable.

The region between the Cypress hills and the international boundary has developed very slowly, chiefly because of the absence of railways, the nearest railway being, until very recently, the main line of the Canadian Pacific, which is approximately from 60 to 90 miles north of the boundary and some 40 miles north of the crest of the hills. The district south of the hills—a strip some forty or more miles in width, north and south—has been without railway facilities until very recently, but the Weyburn-Lethbridge branch of the Canadian Pacific is now in operation from Weyburn to Altawan and from Foremost to Lethbridge, thus traversing the entire district with the exception of a gap of some 60 miles, between Altawan and Foremost. The completion of this railway, giving convenient access to markets, has already given a considerable impetus to settlement and, with the construction of the reservoirs previously referred to and the completion and full operation of the existing irrigation projects, the district should become prosperous.

DOMESTIC, MUNICIPAL AND INDUSTRIAL WATER SUPPLIES.

The rapid settlement of the Prairie Provinces, the growth of the numerous towns and cities, and the building and operation of the many branch lines of railway, in addition to the three great transcontinental lines, have made the securing of sufficient and suitable water supply an increasingly difficult problem. In the southern portion of the provinces of Alberta and Saskatchewan the problem is, in some districts, exceedingly critical, and the time is not far distant when large expenditures will be required by some of the larger cities and towns, and by the railway companies, for the conveyance of water for long distances to serve the needs of the drier districts.

The situation at Moosejaw, Sask., may be cited as an illustration. When the present city was but a village it secured its domestic water supply from Moosejaw creek which flows past, or through, it. With the growth of the village this supply, never satisfactory in quality, proved unreliable in quantity as well. The creek carries a considerable volume of water in times of flood—in fact destructive floods are not infrequent—but in midsummer and early fall it usually dwindles to insignificance. The creek was finally abandoned as a source of domestic supply, although still retained as an emergency supply for fire protection, and a considerable sum was expended in the development of a supply from Snowdy's springs several miles distant. This in turn soon proved insufficient for the needs of the rapidly growing city, and a further supply was developed from Sandy creek, near Caron, some 16 miles west of the city.

The permanence of the present supply is doubtful, and if the city continues to grow as rapidly as within the past few years it will soon become necessary to seek other sources of supply.

Engineers employed by the city have already made preliminary investigations covering possible sources of supply, and have reported that the best available source is the South Saskatchewan river. Engineers of this branch have made surveys for the purpose of determining the most satisfactory and economical method of developing a water supply from this stream, and their conclusions have been published in the reports of this branch for the years 1912, 1913, and 1914. It is probable that no actual construction will be undertaken for some time to come, as the cities of Regina and Moosejaw, both of which and the interlying district can be included in the projected system, have recently expended considerable sums in the enlargement of their present water supply systems, and probably will not take up the larger project until their present supply shows signs of failing to serve their growing needs.

Summary of Irrigation Development.

	Acres.	Acres.
Large Projects—		
Alberta Railway and Irrigation Company (in operation)	130,000	
C. P. R. Western section (in operation)	223,000	
C. P. R. Eastern section (in operation)	400,000	
Southern Alberta Land Company (under construction)	153,000	
Alberta Land Company (under construction)	48,850	
		954,850
Smaller Projects—	Acres.	Acres.
269 licensed schemes, comprising	78,401	
74 authorized schemes, comprising	28,644	
2 applications, comprising	73	
39 applications for which no area is yet available	...	
384		107,118
Total		1,061,968

Domestic, Municipal and Other Projects:

69 licensed
46 authorized
144 applications

259

Industrial Projects (chiefly railway water supplies):

201 licensed
63 authorized
39 applications

303

There are 951 irrigation and water supply projects either completed and licensed, under construction, or waiting authorization.

RECLASSIFICATION OF LAND ON C. P. R. IRRIGATION PROJECT.

In my reports for the past two years reference was made to disagreement between certain settlers and the Canadian Pacific Railway Company as to the area of irrigable land in the western section of that company's irrigation project, and the necessity for this branch to undertake the reclassification of the land. This work was begun in June, 1913, but, owing to the extent of detail involved and the necessity for extreme care in considering each individual case in all its bearings, the field and office work was

not completed until the end of 1915. The net result has been to reduce the irrigable area by about 30 per cent, and it is satisfactory to note that the decision in almost every case, involving the revision of about 1,600 water agreements, has apparently proved acceptable both to the company and to the water users. About 350 revised agreements have actually been filed with the department, and it is understood that the remainder will be completed in due course.

The field work included the detailed examination and survey of about 454,700 acres, of which about 223,500 acres (or 49 per cent) have been classified as irrigable, the remainder being reported as non-irrigable, as follows:—

	Per cent.
On account of topographic conditions	35·4
On account of soil conditions	13·6
On account of right of way for canals, roads, etc.	2·0
Total	51·0

On the 2nd February, 1915, a temporary permit was issued to the company to divert water from Bow river, and the question of granting a permanent license, based on the reclassification and the extent of the constructed works, is now under consideration.

It was decided in June, 1913, and the company was so advised, that the issue of a water license in its favour for the works in the western section would be deferred until:

1. The reclassification of irrigable land shall have been completed by government engineers;

2. Until the company shall have completed the construction of a weir in Bow river at the point of intake of the main canal; and

3. That the company will be required to make such alterations in its works as may be found necessary and recommended by the Commissioner of Irrigation upon inspection at the conclusion of the work of reclassifying the irrigable land.

The intake weir has been completed, as well as the reclassification of the irrigable land, and certain improvements to secondary canals A and B have been suggested at relatively small cost. It is not considered reasonable, however, to insist upon the immediate undertaking of further alterations to the works unless they can be shown to be absolutely necessary at the present time, and our engineers are now engaged in a detailed inspection of the canals and structures in order that the department may be fully informed of their capacity and condition before completing the arrangements for the issue of a final water license.

Mr. Gavin N. Houston, C.E., has been in full charge of the field and office work of land reclassification and canal inspection, and the department was very fortunate in securing the services of an officer so capable and tactful. Mr. Houston is to be congratulated upon bringing to a successful conclusion an exceedingly complicated and difficult task.

It is expected that the classification of irrigable land in the eastern section of this project will be completed during the present year.

SOUTHERN ALBERTA LAND COMPANY.

Reference has been made in the preceding pages to the temporary abandonment of constructioon work by this company owing to the apparent impossibility of financing the work during the continuance of the war. A concise statement of the company's financial difficulties and of the assistance given by the government by way of loan will be found in the report for last year.

Pursuant to an agreement dated the 31st July, 1914, between the Canadian Government and the Southern Alberta Land Company, *et al.*, the Government has loaned

the company $354,684, taking as security a mortgage on some 30,000 acres of the company's land. All of this sum has now been paid over to the company, payment having been made as follows:—

July 10, 1914	$ 50,000
August 4, 1914	90,000
September 11, 1914	100,000
July 16, 1915	114,684
	$ 354,684

The expenditures from this fund up to the 15th April, 1916, have been $279,634.96, accounts for which have been submitted and audited by this department, leaving an unexpended balance of $75,049.04, of which $35,071.27 is in the Bank of Montreal at Medicine Hat, Alta., and $39,977.77 is in the hands of Sir William Plender, the receiver and manager of the company, in London, England. Some portion of the last-mentioned sum may have been expended by the receiver, but no accounts covering any such expenditures have as yet been submitted.

The company has been unable, as yet, to raise the further sum of $800,000, which it undertook to raise under the provisions of the agreement previously referred to, and it has therefore been impossible to carry out any one of the several construction programmes submitted by its chief engineer.

The only construction work carried on during the past year has been the repairs to the diversion dam. During the high water in Bow river in June, 1915, a section some 200 feet long, in mid-channel, was washed out. Continued high water prevented repair work for some time, and when it was undertaken later in the season labour was scarce and slow progress was made. The repairs have, however, now been completed at a cost of some $30,000, and the dam is now believed to be capable of withstanding any flood that is at all likely to occur.

Aside from the repairs to the dam the company has confined its activities to the preservation of the works already constructed, and to the management of its farms and live stock. The company's farming and range operations during 1915 showed a net profit of over $40,000. The rainfall for the growing season of 1915 was 9·25 inches, as compared with 2·16 inches for 1914, and the excellent crops clearly show what the company's lands will produce when the necessary amount of moisture is applied at the right time, either in the form of rain or irrigation.

The company's total grain crop was as follows:—

	Bushels.
Wheat	36,260
Oats	63,025
Barley	18,912
Speltz	3,975
Rye	2,600
Flax	2,000
Total	126,772

The yield of wheat averaged 44 bushels per acre for 826 acres; oats averaged 77 bushels, and barley about 53 bushels per acre, and but a small proportion of the crop was grown on summer-fallowed land.

The company has 570 acres of alfalfa, all of which is grown for seed, for which the demand at present exceeds the supply in so far as this company is concerned.

Unless further funds can be raised at an early date for the completion of the works, so as to get water on some portion of the land, the outlook for the company is none too bright.

THE ALBERTA LAND COMPANY.

This company is practically a subsidiary company to the Southern Alberta Land Company. A tract of some 67,674 acres was sold to Mr. F. P. Aylwin, and by him assigned to the Alberta Land Company. The land is so situated—at the northwest

corner of the Southern Alberta Land Company's tract—that it can most readily be irrigated by water diverted from the works of the latter company. An agreement exists between the two companies whereby the Southern Alberta Land Company has undertaken to build the necessary canals for the irrigation of the Alberta Land Company's tract and to permit of the required quantity of water being diverted through the works of the former company. The main canals have been built, but cannot be used at present, as the works of the Southern Alberta Company are not sufficiently completed to carry water to them. This company is also in financial difficulties, and is in the hands of a receiver. Its present unfortunate position is due, in part at least, to the failure of the firms of Chaplin, Milne, Grenfell and Company, and The Canadian Agencies, Limited, in which most of its funds were invested. There is apparently little probability of the company being able to re-establish itself on a sound financial basis until after the end of the war.

LETHBRIDGE NORTHERN IRRIGATION PROJECT.

This has been designated in previous reports as the "Oldman River Diversion Project," but the new name has now been adopted as more suitable. The project as originally projected provided for the irrigation of some 100,000 acres immediately north of Oldman river in the Lethbridge district, and our surveys were made at the instance of a very considerable number of settlers in that district.

Reference was made in the report for last year to some opposition to the project which had developed among the settlers in the western part of the district, but the extent of that opposition had not at that time fully developed. The settlers in the Barons-Carmangay district have since decided that they do not want to be included in the district, and the plans of the project have therefore been modified so as to exclude these lands.

The resultant changes comprise the abandonment of some 35,000 acres of land at the extreme westerly end of the district, the elimination of a storage reservoir at lake Kehoe, the re-location of some twenty-five miles of canal, and the extension of the project to include a small district immediately west of Lethbridge, which was not included in the original plan. It is also believed to be possible to include a considerable area south of Oldman river in the vicinity of the towns of Pearce and Orton, and surveys are now being made to determine the feasibility of this extension and the area that can be served by it.

It is expected that by the end of the season of 1916 all this work will have been completed and that it will then be possible to accurately define all the irrigable land and to give a close approximation of the cost of construction. It will then rest with the settlers to decide whether or not they will organize an irrigation district, under the provisions of the Alberta Irrigation District Act, and raise money for the construction of the works.

TABER IRRIGATION DISTRICT.

There is a considerable area of first-class agricultural land, well adapted to irrigation, lying east of Lethbridge along the line of the Canadian Pacific Railway Company's branch between Dunmore and Lethbridge, in Townships 9 and 10, Ranges 16, 17 and 18, West of the 4th Meridian. Settlers in this district have been seriously affected by frequently recurring years of drought, and, becoming convinced of the value of irrigation as practised in the Coaldale district immediately east of Lethbridge, they endeavoured to arrange with the Canadian Pacific Railway Company for an extension of the canals of that company's Lethbridge system so as to provide for the irrigation of their own lands.

Surveys were made by the railway company, and the project was found to be feasible at reasonable cost. The plan contemplates the storage of water in Chin cou-

lee at the eastern end of the company's Lethbridge irrigation system, and its diversion thence, through a canal running in a general easterly direction, through the tract to be irrigated, which lies between the towns of Chin and Taber.

The company's original surveys indicated that approximately 17,000 acres of land could could be irrigated in this manner. There was, however, at that time no law in existence under which the interested settlers could organize as an irrigation district, and raise the money necessary for the construction of the canals. The desire for a system of irrigation was, however, so strong that the Government of the province of Alberta was induced, at its session early in the year 1915, to cancel the then existing but out-of-date and unsatisfactory irrigation district law, and to enact a new law under the provisions of which settlers can form an irrigation district and raise money by the sale of bonds secured to their land for the purpose of constructing the necessary works.

Upon the enactment of this law a petition was presented to the Alberta Government for the formation of the Taber Irrigation District, and such a district was subsequently organized. At the same time the prime movers in the case entered into a tentative agreement with the Canadian Pacific Railway Company, whereby that company undertook to construct all necessary works to deliver water at some point on each quarter-section of irrigable land within the district, taking in exchange the bonds of the district for an amount sufficient to cover the cost of the works, estimated at about $10 per irrigable acre.

Apparently throughout these earlier negotiations no significance was attached to the fact that within the proposed irrigation district, which comprises some 37,000 acres, of which about 19,000 acres are susceptible of irrigation, there are about 13,000 acres of school land, title to which is still vested in the Crown in the right of Canada. Some 8,000 acres of this school land are actually irrigable under the proposed system but, as title to land is still vested in the Crown, inasmuch as the payments thereon have not yet been completed, it is obviously not in the power of the purchasers and present holders of the lands to place a further and prior lien upon them in order to secure the irrigation district bonds, without the consent of the Dominion Government.

Under the provisions of the law respecting the School Endowment Fund, the Dominion Government, acting as the trustee of the fund, is required to invest all the proceeds of the sales of school lands and to transfer the interest thereon, less expenses of management, to the Provincial Governments to be used by them for educational purposes. As the Government of the province of Alberta was the beneficiary in this case, the promoters of the Taber Irrigation District asked it to consent to the taxation of school lands for the purpose of raising funds for the construction of irrigation works under the Irrigation District Act. The Provincial Government transmitted this request to the Dominion Government and asked that legislation be enacted by Parliament to permit of the school lands within this irrigation district being dealt with under the provisions of the Irrigation District Act, in the same manner as though they were patented lands.

The Alberta Irrigation District law provides that the irrigation district bonds shall be a first lien upon all lands within the district. Compliance with the request of the Provincial Government would therefore give these bonds precedence over the claim of the School Endowment Fund for the unpaid portion of the purchase price of the land, and this, it was felt, would be unwise and unfair to the interests of education within the province. Being desirous, however, of meeting the wishes of the Provincial Government and of the settlers within the Taber Irrigation District as far as possible in this matter, an Act was passed by the Dominion Parliament assenting to the inclusion of school or Dominion lands within the boundaries of the Taber Irrigation District, but providing that, in the event of any such lands being sold under the provisions of the Irrigation District Act, the sale price shall include an amount sufficient to fully satisfy the prior claims of the Crown.

The practical effect of the Dominion legislation is to make the irrigation district bonds a second mortgage on the school lands within the district. It is understood that this is not satisfactory to the Canadian Pacific Railway Company and that it will probably decline to accept the bonds of the district. If such proves to be the case, the project may have to be abandoned or extended in an easterly direction so as to include a further area of irrigable land to replace the school lands, which, for the most part, lie in the westerly portion of the district.

It is unfortunate that any legal difficulties should prevent the irrigation of land in this vicinity, as it is peculiarly well adapted to irrigation and quite a little money has already been expended by those interested in the formation of the irrigation district. The difficulty respecting school lands should, however, have been considered by the interested parties at an earlier stage of the proceedings.

HYDROMETRIC SURVEYS.

The work of stream measurement has been carried on systematically and has been extended to include the upper tributaries of the North Saskatchewan and Athabaska rivers, and the Peace river at Fort Vermilion. Increased attention has been given to winter measurements, which are so important in power development. One of our engineers, Mr. P. H. Daniells, was stationed at Fort Vermilion throughout the winter of 1915-16, for the purpose of measuring the flow of Peace river at that point and at Vermilion chutes, some 65 miles lower down the same stream. The unpleasant nature of his work may be imagined when it is known that the average minimum daily temperature for January, 1916, was 36 degrees below zero, the lowest recorded temperature being 65 degrees below zero. Cutting holes in the ice across a stream 1,100 feet wide and handling a current meter in such weather is not an ideal occupation.

A full report of this important branch of work will be published separately at an early date.

DRAINAGE.

Very little drainage work has been undertaken during the past year, and there is little present prospect of much activity in the near future. A good many applications have been made for permission to drain large areas of submerged or swampy lands in remote districts, and for the purchase of the land to be reclaimed, but it is not considered to be good policy to encourage such enterprises while large areas of swampy land in nearer and more thickly settled districts are awaiting reclamation. Several promising reclamation projects are being held up because their active promoters are now in military service.

From time to time complaints are received that the drainage of a lake or swamp has resulted in damage to the land of someone in the neighbourhood. Upon inquiry, or inspection by our engineers, it is usually found that some settler, or group of settlers, has undertaken the work for the purpose of reclaiming waste land forming part of his own farm, and that those responsible for the work have not been aware that their action was illegal. It has generally been found possible to reconcile the apparently conflicting interests, and most of this kind of work of which we have knowledge has really been beneficial, although without legal warrant.

In a few cases rather serious damage has been done by illegal drainage operations, and in one notable case the injured person has brought an action for damages against those responsible. The result of this action is not yet known, but it is to be hoped that a conviction will have a deterrent effect upon others who may contemplate similar action. There is no excuse, other than ignorance of the law, for the illegal drainage of small areas of submerged or swampy land. The provincial "Private Ditches Acts" provide simple and adequate means for carrying out all reasonable projects of this nature, and the consent of the Dominion Government can readily be obtained for the draining away of any bodies of water which may be affected and which are controlled by the Crown under the Irrigation Act.

PRACTICE OF ECONOMY.

The sum appropriated by Parliament for the work of this branch for the fiscal year 1915-16 was $268,000. The estimates were prepared and approved in September, 1914, when the seriousness of the war and its probable duration were not as fully comprehended as they now are. As these conditions became more apparent every effort was made to economize. Some investigations which had been planned, and for which provision had been made in the Estimates, were abandoned and only the really necessary work was carried on. The result is that we have expended only $243,500, thus effecting a saving of $24,500.

REVENUE.

Appended hereto is a statement of the revenue received and accounted for by this branch during the year ended the 31st March, 1916. This consists chiefly of payments made on account of land sold for reclamation by irrigation, the balance being made up of rentals for reservoir leases, fees paid for water licenses and for the registration of water and other agreements.

Lethbridge agency	$ 708 11
Calgary agency	1,809 59
Medicine Hat agency	7,214 61
Swift Current agency	486 70
Maple Creek agency	5,325 60
Irrigation Branch, Calgary	512 00
Irrigation Branch, Ottawa	1,435 73
Total	$17,492 34

E. F. DRAKE,
Superintendent of Irrigation.

SUMMARY REPORT ON IRRIGATION AND CANADIAN IRRIGATION SURVEYS.

OFFICE WORK.

The office work carried out is indicated by the schedule below, which is given in a similar form to previous years for purposes of comparison:—

Letters received	14,721
Letters sent	22,959
Applications for water rights recorded	50
Plans examined and filed	285
Agreements, right of way, etc., recorded	62
Right-of-way plans recorded in quadruplicate	40
Water Agreements filed in quadruplicate	254
Water Agreements cancelled	335
Water Agreements transferred	90
Notices for publication prepared	64
Plans prepared	964
Blue prints made	17,200
Certificates issued under Section 20	60
Certificates issued under Section 33	41
Licenses recorded, in triplicate	62
Weekly reports received from engineers	2,444
Reports of discharge measurements received	3,852
Reports of gauge heights received	7,358
Descriptions of regular gauging stations H. 1	144
Reports of changes at river stations, H. 22	289

STREAM ADMINISTRATION.

During the year the commissioner made a study of a new system of stream administration, which was later completed in detail by Mr. R. J. Burley. Under the new system it is proposed to deal with applications for the use of water by drainage basins, rather than by separate streams, as under the present method of administration. The old system is considered to be fundamentally wrong, as it fails to recognize the rights of the prior appropriation, on the main stream of a drainage basin, as against subsequent appropriation on the tributaries to this main stream above them. It is the intention to put the new administration in force as soon as the staff available to complete the very great amount of work necessary will allow.

FIELD WORK.

The field work which was carried out is indicated below, subdivided under the headings of the field parties which carried out the work.

Eastern Cypress Hills District—Irrigation Inspections.—This work was confined to nearly the same district as in the previous year, the boundary between the east and west districts being shifted about one township to the west in order to more nearly equalize the amount of field work in each district. The work was efficiently carried out by Mr. M. H. French, the engineer in charge. The party took the field on April 25, 1915, and finally disbanded on December 10, completing a season of 184 working days. The total number of inspections made was 113, the number of schemes surveyed was nine, and in addition to this, right-of-way surveys were made across sixty-seven quarter-sections of land. The number of miles surveyed by team was 2,285. The very large number of right-of-way surveys took an undue portion of the time of the party, and made it necessary that the ordinary routine work be curtailed as much as possible, which condition was undesirable, but could not be avoided. The party consisted of five men with five horses.

Western Cypress Hills District—Irrigation Inspections.—This work was also confined to the same district as in the previous year, with the alteration of the dividing line between the districts, as noted under the eastern district. The work was efficiently carried out by Mr. H. R. Carscallen, the engineer in charge. The party took the field on April 26, 1915, and disbanded on November 19, the engineer making a further inspection trip with one assistant, ending on December 1. The season's work comprised 190 actual working days. The total number of inspections made was ninety-two, the number of schemes surveyed was forty-two, and in addition to this, eighteen right-of-way surveys were made. The number of miles travelled by team was 3,515, and by railway 579. The routine work of inspection of this party also suffered on account of the large number of surveys which had to be made, but as in the eastern district, this could not be avoided. The party consisted of six men with eight horses.

Calgary District—Irrigation Inspections.—The work was confined to the same district as in the previous year, but the difficulty of transportation, owing to the very heavy roads, due to the wet season, hampered the work considerably, and a few of the more outlying schemes were not inspected. The work was again carried out by Mr. R. H. Goodchild, who had one assistant and one team of horses. The work was commenced on April 26, 1915, and ended on December 15, when the severity of the weather made it impossible to continue any longer. The season comprised 175 actual working days, of which twenty-one were spent in the Calgary office, plotting plans, and on special stream measurements, during the period of extreme flood in the streams in the district. The total number of schemes inspected was 100, the number of schemes surveyed was seventeen. The number of miles travelled by team was 1,460, and by train 640.

Special Inspections—Domestic, Municipal, Irrigation and Industrial.—This work was carried on under the supervision of Mr. P. J. Jennings, the office engineer. The routine work as office engineer consists mainly of examining and checking all plans, prepared by the inspecting engineers, or submitted by applicants for water rights or other purposes. In addition to this, Mr. Jennings supervised the work of the two special inspectors, and saw that for each trip the inspections were properly grouped, as regards economy in time and travel, and the urgency of an early report. Owing to the very scattered location of the inspections, this is very often a matter requiring considerable judgment.

Mr. C. Chambers carried out the inspections in Alberta, totalling seventy-one in number, and made six surveys of all descriptions. He travelled 6,550 miles by train and 2,367 miles by team.

Mr. F. R. Burfield carried out the inspections in Saskatchewan, totalling seventy-eight in number, and made thirty-seven surveys of all descriptions. He travelled 10,152 miles by train and 2,068 miles by team.

Mr. Jennings examined and checked 206 plans of all descriptions, and fifty-six descriptions for right-of-way. He also personally made five inspections in the field, which required special attention.

Large Irrigation Companies.—Progress Reports.—Mr. S. G. Porter, Assistant Chief Engineer, again devoted the bulk of his time to special supervision of the large irrigation companies. In addition, he had under his special charge the approval of the classification of irrigable land in the eastern section of the Canadian Pacific Railway Company's irrigation block, and in the proposed Taber irrigation district.

The Southern Alberta Land Company did not carry on any construction work during the year, other than repairs to their diversion dam in the Bow river, but the conditions at this point were reported on from time to time. During the flood in the Bow river in June, 1915, a part of the dam in the south channel failed and the concrete apron below the dam in the north channel was damaged. This latter damage has been repaired, and the construction of a new dam, bridging the portion that failed in the south channel, is under way.

The Canadian Pacific Railway Company's Lethbridge section (Alberta Railway and Irrigation Company) was successfully operated during the season, but no field inspection of the works was made.

Classification of Irrigable Land—C.P.R. Eastern Section.—One field party consisting of six men, all told, with six horses, was put in the field under Mr. J. S. Tempest, who had as his assistant Mr. P. A. Fetterly. The party commenced this work on April 12, 1915, and continued until October 1, when it was shifted to the Taber irrigation district. This party continued the work which was carried on during the previous season. An irrigable area, of approximately 126,000 acres, was inspected, but further investigations of the drainage and alkali conditions are necessary in respect to a part of this area.

Classification of Irrigable Land—Taber Irrigation District.—The Taber irrigation district has been organized by the farmers between Chin coulee and Taber under the provisions of the Provincial Irrigation District Act.

The district contains about 20,000 acres of first-class irrigable land which can be irrigated by a proposed canal taking out of Chin Coulee reservoir, already constructed by the Alberta Railway and Irrigation Company. The water will be supplied to the reservoir through the main canal of the Alberta Railway and Irrigation Company's system during the non-irrigation season, and at times of surplus supply during the irrigation season.

A study of the water supply indicates that there is an ample supply available for 17,000 acres, and it is proposed to limit the area to be served to that amount.

The field party under Mr. Tempest, which had been engaged in the classification of Canadian Pacific Railway Company's eastern section lands, made a thorough classification of the lands in the Taber irrigation district, from October 2 to November 23, 1915.

Reclassification of Irrigable Land—C.P.R. Western Section.—The reclassification of irrigable land in the Canadian Pacific Railway western section was continued under the charge of Mr. G. N. Houston. His chief assistant, Mr. R. C. Spitzer, had special charge of the work in the office. One large field party, consisting of three assistant engineers and fourteen other men, took the field on April 15, 1915, and completed the work on September 9, when Mr. Houston came into the office, and the remainder of the party were transferred to work on the Lethbridge Northern Project. Provision was made for the employment of eleven assistant engineers in the office, but this number was reduced after the middle of the summer, when it was found that a smaller number was able to keep up the work.

A summary of the seasons reclassification is as follows:—

	Acres.
Irrigable	53,628
Non-irrigable	97,560
Right of way	3,700
Total	154,888

During the winter months Mr. Houston completed his final report on the whole work of reclassification in the western section.

Irrigation Surveys.—Mr. B. Russell, Chief Field Inspector, again had supervision of the irrigation surveys that were carried on during the year. The work was developed by four parties, as indicated hereunder.

The Lethbridge Northern Irrigation Project.—This work previously reported on as the Oldman River Irrigation Project was commenced in 1913. At the end of 1914 the work had progressed to the extent of the actual location of all main and secondary canals, and the commanded area had been determined by levels run over all section lines. During 1915 the work consisted of making plane table surveys of each section of land to determine the definite irrigable area. The party commenced work in the southeast end of the project, where the farmers were most anxious for irrigation, and covered practically all of the project lying south and east of Noble.

During the winter months a farmers' meeting was held at Barons, at which the farmers living north and west of Noble decided that they did not want irrigation. This has made necessary a change in the layout of the project to serve only those lands where the farmers want irrigation. This makes Lake Keho reservoir unnecessary, and the small project is quite as feasible and can be constructed for the same cost per acre as the original project. As the amended project now stands, the only field work remaining to be done at present is the plane tabling of about eleven sections of land, and the re-location of about 25 miles of main canal.

Mr. V. M. Meek, the engineer in charge, took the field on April 29, 1915, and disbanded his party on November 22, completing a season of 179 actual working days. Mr. Meek was given three assistant engineers, who operated three plane tables, and the party consisted of fifteen men, all told, with ten horses. On September 17, 1915, the party from the Canadian Pacific Railway western section was transferred to this work. This party also operated three plane tables, and put in fifty-five actual working days, disbanding for the season on November 19. During the season the total work done on this project comprised the contouring of 149,515 acres of land, and the running of 315 miles of levels.

Milk and St. Mary Rivers—Irrigation Project.—This work was commenced in 1914. During that season the main canal locations were developed from the St. Mary river, were partly developed within the tract, and the available reservoir sites were

reconnoitred. Also levels were run over the township lines for the whole area to be developed, thus allowing the commanded area to be approximately determined.

The area of irrigable land which can be served under this project depends very largely on the maximum development cost per acre which is assumed. In addition to this, the quantity of water which will be available to Canada from the Milk and St. Mary rivers is not known definitely. Accepting the larger figure of irrigable area and the legal duty of water, the surveys made last year made it apparent that to ensure an adequate supply of water it would be necessary to tap the Waterton river as well as the Belly river.

Party No. 1, under the charge of Mr. T. M. Montague, with Mr. L. J. Gleeson as assistant, was first employed in locating a feeder canal which would convey water from both the Waterton and Belly rivers, and deliver it into the St. Mary above the proposed intake from that river. The party then surveyed several reservoir sites, located some main canals through the irrigable tract, and carried out some levelling to develop topographical features. This party took the field on April 23, 1915, and disbanded on November 2, completing a season of 162 actual working days. A summary of the season's work is as follows: 372 miles of traverse line, complete with topography; 449 miles of level line only, and 120 miles of flying levels; six permanent iron bench-marks were set, and four others were tied into mean sea-level datum. The party consisted of thirteen men, with eight horses.

Party No. 2 was operated under the charge of Mr. N. M. Sutherland, with Mr. A. W. P. Lowrie as assistant. The work of this party was confined to the development of information within the tract of irrigable land, and comprised the development of reservoir sites, the location of canals, and the closer development of topographical features by running levels along section lines. The party took the field on April 22, 1915, and disbanded on November 11, completing a season of 172 actual working days. A summary of the season's work is as follows: 430 miles of traverse, complete with topography, and 1,133 miles of levels along road allowances. The party consisted of eleven men, with eight horses.

Milk River Traverse Survey.—Under the terms of Article VI of the Waterways Treaty, the United States has the privilege of utilizing the channel of Milk river in Canada for the conveyance of water diverted from the St. Mary river. It is probable that the conveyance of this added quantity of water will cause damage to the river bottom-lands along the Milk river. The United States is expected to turn some water into the Milk river during 1916, and so it was decided to make a careful survey of the river channel in Canada to determine the actual conditions existing before any water was turned in.

A party was organized under the charge of Mr. W. Edwards, D.L.S., who had as his first assistant, Mr. E. L. Miles. The survey was carried on by making a careful stadia survey of both banks of the river, taking frequent cross-sections of the river-bed and bottom-lands, and in addition taking exhaustive topographic notes showing all the river bottom-lands liable to injury. An accurate line of levels was carried along, and the survey was carefully tied on to the government land survey monuments throughout its entire length. The party took the field on July 3, 1915, and was disbanded on November 29, completing a season of 103 days actually on the line. A summary of the season's work is as follows: Length of stadia traverse line, 180 miles; length of river meander surveyed, 216 miles; river cross-sections taken, 131; ties to survey monuments, forty-three; set twenty-four permanent iron bench-marks. Up to the middle of September, the party consisted of twelve men, all told, transportation being by means of three large canoes. Later the party was increased to fourteen men, all told, with one team of horses.

International Waterways Treaty.—Mr. R. J. Burley again had charge of the special investigations in connection with this work. Early in April a conference concerning the terms of the treaty was held at Washington, D.C., and in the latter part of

May the case was fully argued before the International Joint Commission at St. Paul, Minnesota. Both these meetings were attended by Mr. Burley and the commissioner, in company with other Canadian Government officials, including the superintendent of irrigation. During the summer, Mr. Burley made a trip in the field in order to familiarize himself with certain of the international streams, and early in November went to New York City to attend an executive session of the Joint Commission. Shortly after the New Year his headquarters were transferred to Ottawa in order that his services might be more readily available, now that this case has reached the stage of settlement before the Joint Commission.

Duty of Water Experiments and Demonstration:—This work was again somewhat extended during the year, under the supervision of the late Mr. G. D. Walters, who had direct charge at Strathmore in the Canadian Pacific Railway western irrigation block of the dual work of conducting a series of special duty of water experiments and demonstrations and also conducting demonstration work on the irrigated farms in the close vicinity of Strathmore.

Mr. J. E. Degnan had charge of the work in the Coaldale district of the Alberta Railway and Irrigation Company's project at Lethbridge, and his work was devoted to measuring the actual quantities of water applied to the irrigated fields in this district, gaining all information possible with a view to demonstrating what is the proper and most beneficial duty of water.

Mr. W. H. Snelson was placed in the Gleichen irrigation district with a view to carrying on work in a similar manner to the Coaldale district. Owing, however, to the very wet season, very little water was used here, and so the data gathered were meagre.

Through the courtesy and co-operation of the Southern Alberta Land Company, some very useful data were also compiled covering the use of water on their irrigated demonstration farm at Ronalane near Medicine Hat.

During a very wet year like the past one has been, it is impossible to get as complete experimental data as during the drier years, because with the high natural precipitation it is impossible to note the crop growth with very small quantities of water, and then observe step by step the results that are gained by applying increasing depths of water, and the demonstration work is not so satisfactory, because in the very wet years the farmers do not give so much attention to irrigation. As the climate cannot be made to order, however, it is equally as important to note the results in a wet year as in a dry year in order to determine average results.

Mr. G. D. Walters, the officer in charge of this work, died very suddenly in January, 1916. Mr. Walters had shown great ability and enthusiasm in his work, and his death was a great loss to the staff.

Absorption losses in Irrigation Canals.—Investigations of this important subject were continued during the year, a joint report being submitted by Mr. R. J. McGuinness and Mr. L. E. Kendall, who was transferred for the summer from the Ottawa staff. The work was considerably hampered on account of the wet weather, which caused local run-off into the canals, but some records were obtained which will be very valuable in the future, when after further work all the data will be compiled and studied.

These same engineers, in co-operation with Mr. C. L. Dodge, hydrometric engineer on the Canadian Pacific Railway staff, carried out a series of experiments for the determination of the co-efficient "N" in Kutters formula, on chosen stretches of the main canal in the Canadian Pacific Railway western section. Owing to the inability to operate the canal as desired, this work, while showing interesting results, was undeterminative.

Hydrometric Surveys.—This work, covering the measurement of the flow in all the important streams in Alberta and Saskatchewan, has a very wide scope, and it is only possible in this summary report to indicate the work that has been carried out.

The results of the work in detail will be published in a separate report on stream measurements. The organization during 1915 was similar to the previous year. The staff consisted of Mr. P. M. Sauder, Chief Hydrometric Engineer, and two chief assistants, Mr. G. H. Whyte and Mr. G. R. Elliott, with one recorder, one computer, and one clerk in the office. Fifteen assistant engineers were employed in the field. The territory was divided into thirteen districts, two new districts, Nordegg and Peace River, being added to the territory covered in 1914.

During the open-water season, records were taken at 184 regular gauging stations on streams in Alberta and Saskatchewan, and at 115 regular gauging stations on irrigation canals and ditches. Winter records, which are so valuable for power investigations and municipal water supplies, received special attention, and records were secured on nearly all the important streams in the two provinces.

During the early spring three of the irrigation inspecting engineers assisted in collecting the records of early spring run-off in the Cypress Hills districts.

Current-Meter Rating Station at Calgary.—The rating station was operated as usual, and a total of seventy-five meters were rated as below:—

Irrigation Branch	56
British Columbia Hydrographic Surveys	9
British Columbia Water Rights Branch	3
Manitoba Hydrographic Surveys	4
Water Power Branch	1
Department of Public Works, Canada	1
Canadian Pacific Railway	1
Total	75

F. H. PETERS,

Commissioner of Irrigation and Chief Engineer.

PART VIII.

WATER POWER.

No. 1.

REPORT OF THE SUPERINTENDENT OF WATER POWER

This report concerns the Dominion Water Power Branch for the fiscal year ending March 31, 1916, and is submitted together with the attached reports of the Chief Hydraulic Engineer, and of officers and engineers in charge of divisions.

Owing to the absence of many members of the staff on overseas service, it has been very difficult for me to maintain the various phases of our office and field work up to last year's standard. However, as very little new work has been attempted, and the maintenance of but routine and essential work has been our main object, we have been able to secure satisfactory results. In view of all the circumstances, satisfactory progress has been made in all the work of the branch at head office, and the various permanent offices throughout the Dominion.

COMPLETION WINNIPEG RIVER SURVEYS.

One of the most important field investigations the branch has had under way since its organization, namely the power and storage possibilities of the Winnipeg river, carried on under the immediate direction of Mr. J. T. Johnston, chief hydraulic engineer of the branch, has been recently completed, and a full report on the same is now in the hands of the King's Printer. This report will form a notable addition to the information respecting water resources in Canada, and will prove invaluable to the department in working out an efficient and effective administration of the exceedingly important water-powers of the Winnipeg river. The results of Mr. Johnston's investigations on the Winnipeg river are of tremendous import to the city of Winnipeg, and might be summarized as follows:—

With the plant of the Winnipeg Electric Railway Company on the Pinawa channel and the municipal plant of the city of Winnipeg at Point du Bois already in existence, and after fully protecting the interests of these two plants in all respects, it has been possible to divide the remainder of the river drop into seven concentrations for power development, having a total possible output of 175,000 continuous 24-hour horse-power available at 75 per cent efficiency under the present unregulated minimum flow, and 313,000 continuous 24-hour horse-power available from the proposed 20,000 second-foot dependable minimum flow under regulated conditions. Including the two existing developments the total resources of the power reach at nine sites are 249,000 and 418,000 continuous 24-hour horse-power under the above respective conditions of flow. As these totals are given in terms of 24-hour power, they give a rather limited estimate of the river's resources, particularly in view of the fact that each proposed plant has ample pondage facilities to handle any peak load which may be anticipated. What may be called commercial output might therefore be considered as very greatly in excess of the above figures. The centre of gravity of this power is within 65 miles of the city of Winnipeg.

The departmental water-power investigations on the Winnipeg river have been more than usually comprehensive and complete, and have involved a very considerable expenditure. It was considered essential that the Government should not only secure sufficient information to enable it to evolve a scheme of development which would

realize the maximum advantageous use of the river for power, but the information should be sufficient to demonstrate, beyond doubt, the feasibility of these water-powers, technically and commercially.

Practical and suitable regulations are a fundamental pre-requisite, if the unique results of these departmental power investigations are to find their full fruition. The present regulations are in some particulars inadequate. This has been realized for some time, and every possible endeavour is being made to revise the present regulations so that they will be satisfactory and just to the proprietors of the water-powers; to those who developed them; and to those who will purchase the product; that is, the Crown, the power companies, and the public.

The fortunate power situation on the Winnipeg river cannot be duplicated anywhere on this continent. The natural power advantages of the river are unique, and the whole stretch of the river in Manitoba is under the direct and absolute control of the Dominion Government. There can be no question as to all the power of the Winnipeg river being ultimatetly developed, and in the most advantageous manner.

This means that there will eventually be as much, if not more, power available from the Winnipeg river than is now being developed at Niagara. What this represents to the city of Winnipeg and the province of Manitoba can only be realized by one who understands the tremendous import of the electro-chemical and electro-metallurgical industries of worldwide fame, now firmly established at Niagara, and by one who has a proper conception of the significance of the use to which Niagara power is now put throughout the western portion of the province of Ontario by municipalities, private companies, and through the auspices of the Ontario Hydro-electric Power Commission.

The city of Winnipeg, in the province of Manitoba, has therefore in the water-powers of the Winnipeg river, a potential assurance and guarantee of future industrial, commercial, and municipal growth, the importance of which is not generally appreciated. It is exceedingly fortunate that the Department of the Interior has, in its water-power and general land administration along the Winnipeg river, protected these potential power possibilities in every possible manner.

THE UPPER PINAWA POWER SITE.

As a direct result of the completion by Mr. Johnston of the power and storage investigations of the Winnipeg river, there has been worked out an economical power development on the Pinawa channel between the existing plant of the Winnipeg Electric Railway Company and the company's diversion weirs across the main river. If this scheme is carried out it will accomplish the use of 18-foot fall of the Winnipeg river in the Pinawa channel, which is now going to waste. There will result a power development capacity of 12,300 continuous 24-hour horse-power. A report on this project will appear in a separate report of this branch.

In view of this project being so intimately and inseparably connected with the existing development project on the Pinawa channel, the department has recognized the prior right of the Winnipeg Electric Railway Company to have the opportunity of carrying out the new scheme. The matter has been taken up with this company, and after a careful independent investigation of the representations of the department, it is understood the company's engineers have been favourably disposed to carry out this additional project, and thereby make the company's existing development complete.

It is confidently expected that the new project will be ultimately carried to completion, and, when constructed, the natural power advantages of that stretch of the river now under the control of the Winnipeg Electric Railway Company will be realized to the maximum possible extent.

The Upper Pinawa power project is a direct result of the departmental power and storage investigations on the Winnipeg river. The discovery of this project, the arrangements for having it carried to completion, and its ultimate construction, will prove to be a unique example of constructive conservation.

WATER-POWER EXHIBIT AT PANAMA EXPOSITION.

The water-power exhibit in the Canadian Pavilion at the Panama Pacific International Exposition, conceived and carried out by the engineers of this branch under the direction of Col. William Hutchison, Commissioner General of Exhibitions, with the object of calling attention to Canada's advantages as a water-power country, has already secured excellent results.

This exhibit was taken advantage of as a basis for a propaganda to interest delegates to various technical and professional societies meeting at San Francisco during the exposition, in Canada's great water-power resources. Special efforts were made to interest the delegates in attendance at the annual meetings in September, of the American Society of Civil Engineers, the American Institute of Electrical Engineers, the American Society of Mechanical Engineers, the American Institute of Mining Engineers, and Society of Naval Architects and Marine Engineers.

Immediately following these meetings in September, was held the International Engineering Congress, at which the undersigned had the honour, along with Mr. F. H. Peters, commissioner of Irrigation, of being the engineering representatives of the Canadian Government. The undersigned was also one of the official representatives of the Canadian Society of Civil Engineers. At this congress the following two papers, "Electric Power in Canadian Industry" and "Canadian Hydraulic Power Development," by Col. C. H. Mitchell, Consulting Engineer to the Branch, were read, and pre-arranged discussions thereon were participated in by engineers conversant with the power situation in Canada.

CONGRESS DELEGATES RETURN THROUGH CANADA.

Following the congress, and upon the special invitation of representatives resident within the provinces of British Columbia and Alberta of the following professional engineering societies: Institute of Civil Engineers of Great Britain, the Canadian Society of Civil Engineers, the American Society of Civil Engineers, a special party was arranged, of delegates to the congress, for a trip through the provinces of British Columbia, Alberta, and Saskatchewan, enroute from San Francisco to Chicago, by Seattle, Victoria, Vancouver, Calgary, Moosejaw, and St. Paul. Major C. W. Allen, C.E., representative of this branch in charge of the water-power exhibit at San Francisco, was in charge of the preliminary arrangements for the trip, and accompanied the party part of the way.

The large party of delegates who accepted the invitation were representative engineers, many of them enjoying large practices in various parts of the United States. There were also some official representatives of professional engineering societies of the United States, and of one or two of the more prominent technical journals. The trip was indeed an unqualified success. At Victoria, Vancouver, Calgary, and Moosejaw, the local branches of the Canadian Society of Civil Engineers had charge of all the arrangements. Every facility was offered for the party visiting the more important engineering works and becoming conversant with local industrial and commercial conditions.

While this special trip was in every way an unqualified success, it is regretted that it was not undertaken under the direct auspices of the Government. If so, it would probably have been possible to have had the majority of the delegates of the

International Engineering Congress, most of the foreign delegates at any rate, return through Canada. The whole arrangements could have been undertaken at a very limited expense, the results so far as Canada is concerned, would have been incalculable. As it was, the small party that did take the trip, their first to Western Canada, were unanimous in expressing their astonishment at the tremendous development, engineering, commercial and every other way, that they witnesed from Victoria and Vancouver, through Calgary to Moosejaw. Many of them representing large financial and industrial interests in the United States, stated that they would immediately have their representatives return to Canada with a view to studying the industrial and commercial conditions here, which to date they had not, except in a very indirect way, been very much concerned with. A very interesting feature of the impressions of the party, was with respect to the national parks, especially the Rocky Mountains national park. Many had been in the habit of spending their vacations in Europe, and were astounded at the scenic and other advantages of our parks. Several of the party have already arranged to have their families spend part of the coming summer at Banff. Altogether apart from the engineering and industrial aspects of the trip, Canada will reap benefits by having these distinguished engineers become enthusiastic admirers of and periodic visitors to our national parks, one of our truly great national assets.

LITERATURE DISTRIBUTED AT EXPOSITION.

In connection with the International Engineering Congress, a large supply of printed matter regarding Canada's water-powers was obtained from various government authorities for personal distribution. The branch also undertook the preparation and publication of the five following monographs on the water-power situation in Canada:—

Water-powers of British Columbia, by G. R. G. Conway, Consulting Engineer, Toronto.

Water-powers of the Prairie Provinces, by P. H. Mitchell, Consulting Engineer, Toronto.

Water-powers of Ontario, by H. G. Acres, Hydraulic Engineer, Ontario Hydro-Electric Power Commission, Toronto.

Water-powers of Quebec, by F. T. Kaelin, Assistant Engineer, Shawinigan Power Co., Montreal.

Water-powers of the Maritime Provinces, by K. H. Smith, Resident Engineer, Dominion Water Power Branch, Halifax, N.S.

These have received a very wide distribution, and been highly commended. The first edition is practically exhausted. By special request, a new combined edition is being prepared for distribution in the United States and foreign countries, through our Trades Commissioners.

NECESSITY FOR ADVERTISING CANADA'S WATER-POWERS.

In view of the fact that Canada will probably have to look to the United States for sources of development capital for some years to come, every effort has been made to disseminate information throughout the United States regarding the very fortunate position of Canada with respect to both developed and undeveloped water-powers. While our efforts to date have been somewhat limited in scope and restricted in application, it is felt that the objects are so important and the results so promising, that these efforts should be extended and broadened in every practicable manner. One feasible method of making Canada's power resources and power developments known would be through the medium of moving pictures. Many official, economic and industrial organizations, and some of the more important engineering professional

societies, and most of the American universities, would welcome the loan of moving-picture reels. These should illustrate the great progress already made in Canada in the development and use of water-power, and of the many opportunities for further and new developments, which afford advantageous investment opportunities.

NO NEW POWER PLANTS.

Actual construction operations have not been commenced on any new water-power projects in the Prairie Provinces during the past fiscal year; at the same time, preparations have been under way for the commencement of several important developments. The financial stringency, due to the war in Europe, has prevented the financing of these schemes to date, but it is confidently expected that some of them will be under way during the next fiscal year.

DELAY IN CONSTRUCTION ADVANTAGEOUS.

I can only repeat what I stated last year, that while the present financial stringency may cause some delay in the commencement of new water-power projects, the delay may in the long run be fortunate as it allows the branch an opportunity of proving or disproving, beyond doubt, the economic features of certain important projects in the Prairie Provinces, which, owing to their strategic location close to commercial centres, have already attracted the promoter and the capitalist and caused them to expend considerable money endeavouring to work out schemes of development which could secure the approval of the Government. Continuous hydrometric studies for a period of several years, and a careful analysis of the probable future demands for power, are essential to the final determination of the economic features of every power project, and this is especially so in some of the rivers of the Prairie Provinces, where flow conditions are erratic, and there are competitive sources of power-producing agencies.

WESTERN CANADA NOW COVERED BY HYDROMETRIC SURVEYS.

It is satisfactory to report that all the important rivers in the provinces of Manitoba, Saskatchewan, Alberta, and British Columbia, are now included in the hydrometric work of this department. This work is all being carried on under the most approved practice by qualified technical officers, and while some more active co-relationship with the various organizations is desirable, the field methods which are now employed are satisfactory. The present friendly, frank understanding with the various technical officers, at any rate, engaged on this work, may be considered to be potent of more efficient and effective results in the future.

Some confusion has arisen as to the word "hydrographic" as descriptive of the water resources investigations of this branch, owing to the fact that the term "Hydrographic Survey" has been used for so many years by an organization of the Department of the Naval Service. In order to prevent any confusion, it has been decided to substitute the word "hydrometric" for "hydrographic."

A complete report of the work in British Columbia, by Mr. R. G. Swan, B.A.Sc., Chief Engineer of the British Columbia Hydrometric Survey, will be incorporated in the full report of this branch, as well as a complete report on the Manitoba work by Mr. M. C. Hendry, B.Sc., Chief Engineer of the Manitoba Hydrometric Survey.

WATER ADMINISTRATION IN RAILWAY BELT.

There are many outstanding matters between this department and the provincial Department of Lands, respecting administration of water in the Dominion Railway Belt, which have yet to be settled. Every effort is being made to have these matters

satisfactorily adjusted with the least possible delay. Mr. H. W. Grunsky, who acted as legal advisor to the province of British Columbia for several years in connection with water administration, has been engaged by this branch for some months in working out, under the direction of Mr. S. Maber, Superintendent of the British Columbia Lands Branch, and the undersigned, the details of a final scheme of water administration by the province, and land administration by the Dominion, which will be satisfactory to all concerned.

In order that the whole history of the administration and control of water in the Dominion Railway Belt may be brought up-to-date and made available to Government officers and others interested in this very important question, Mr. Grunsky has prepared an exhaustive chronological statement of the whole matter. As this statement will be of very great general interest and assistance, it will be published in full in the separate report of this branch.

WATER-POWER REGULATIONS REQUIRE REVISION.

While a great deal of the necessary physical or hydraulic data regarding the water-powers in the Prairie Provinces of immediate economic importance is fairly well in hand, and arrangements are under way for obtaining data respecting water-powers which may in the near future become of economic importance, little has been done to perfect the regulations under which these water-powers are administered. Practicable and suitable water-power regulations are a fundamental pre-requisite if the unique results of our water-power investigations are to find their full fruition. Experience has shown that one of the most essential features of successful water-power administration is the adoption of satisfactory regulations which will not only protect the public by guaranteeing conservation in construction methods, control of rates, reasonable rentals, etc., but which will also be sufficiently attractive to the financier from a commercial standpoint. Our water-power regulations in some particulars need revision, and it is hoped that before another fiscal year is ended, these necessary revisions will have been carried out. In all these matters the department is fortunate indeed in having the services of such an experienced and expert advisor as Mr. Grunsky.

NOVA SCOTIA WATER-POWERS.

During the year an arrangement has been completed with the Nova Scotia Water-power Commission for co-operative investigations of the water-power resources of that province. Mr. K. H. Smith, who has had considerable experience in our water-power investigations in the western provinces, has been placed in charge of this work as resident engineer, with headquarters at Halifax. So far the progress of the work has been very satisfactory. A great deal of territory is being covered at a minimum of expense. At the request of the provincial authorities the co-operative agreement has been extended for another fiscal year, and it is hoped that nothing will prevent the arrangement being continuously carried on for a cycle of years sufficiently long to guarantee the substantial thoroughness of the work, and the permanent value of the results. A complete progress report of this work to date will be included in the separate annual report of this branch.

FOREIGN VISITORS.

Several distinguished visitors from foreign countries have spent some time in the branch studying our methods of water-power administration, more especially our methods of water-power investigation. It is very satisfactory, indeed, to know that the work of the branch is considered of sufficient importance to warrant these gentlemen spending some time with us. It is hoped that our experience and efforts will be of some assistance to them in working out their own water-power problems.

LAKE OF THE WOODS REFERENCE.

The Lake of the Woods Reference before the International Joint Commission, which is of such vital importance to the power situation on the Winnipeg river, has still to be determined. It is expected, however, that a tentative report, at any rate, will be forthcoming from the commission in the near future.

A special sitting of the commission at Winnipeg, in January, was held to enable the power interests to present their views. At this special hearing the case for the Dominion Water Power Branch was presented by Mr. Edward Anderson, K.C. The full report of Mr. J. T. Johnston on the power and storage investigations on the Winnipeg river, a few advance copies of which had been specially obtained for the purpose, was submitted to the commission as part of our case. Supplementary to Mr. Johnston's report was an exhaustive report by Mr. H. E. M. Kensit, electric-mechanical engineer of this branch, on "Winnipeg River Power and the Interests Dependent Thereon," with special reference to capital invested, and labour employed, which was also submitted as part of our case. Mr. Johnston's report is being printed as a separate Water Resources Paper No. 3. The report by Mr. Kensit being unique, and being practically the first comprehensive investigation of the nature and use to which water-power is put in a typical large Canadian city, should be published as a separate Water Resources Paper. It is hoped that there will be sufficient funds available for this purpose in the coming fiscal year.

The following general statement covering the interests of the Dominion Water Power Branch was presented to the International Joint Commission at its hearings at Winnipeg:—

WINNIPEG, February 1, 1916.

The Secretaries,
The International Joint Commission,
Winnipeg, Manitoba.

At the public hearing of the International Joint Commission at Kenora, September, 1912, the undersigned submitted a short general statement, dated September 17, 1912, setting out the reasons why the Department of the Interior was interested in the Lake of the Woods Reference, and pointing out so far as it was possible at that time, the necessity for regulation and control of the waters of the Lake of the Woods watershed in the interests of the water-powers on the Winnipeg river in the province of Manitoba.

In this statement it was pointed out that the policy of the Interior Department in water-powers was to ensure maximum possible advantageous development and to provide sufficient information to dictate developments consistent with this policy, the department had under way a complete investigation of the water resources of the whole Winnipeg River basin, with special reference to the development of power on that stretch of the Winnipeg river in the province of Manitoba.

These investigations, which have been unusually comprehensive, covering all pertinent phases of the power situation, have been recently completed and show conclusively that practically all of the fall of the Winnipeg river within the province of Manitoba, about 270 feet, can be concentrated and used for power purposes at nine distinct power sites, two of which are now partially developed and another of which is about to be developed:—

The two partially developed sites are:—

1.—*The plant of the Winnipeg Electric Railway Company* located on the Pinawa channel of the Winnipeg river, 58 miles from the city of Winnipeg, was commenced in 1902 and completed and placed in operation in 1906. There is at present installed a turbine capacity of 34,000 horse-power, which supplies power for use in and around Greater Winnipeg.

2. *The Municipal plant of the city of Winnipeg* located at Point du Bois falls on the Winnipeg river, 75 miles from Winnipeg, was commenced in 1909 and placed in operation in September, 1911. It was constructed by the citizens of Winnipeg in order to meet the growing demand for power and to introduce competitive conditions in the power market. The plant has at present installed eight turbine units with a capacity of 47,000 horse-power, and an additional provision is made for an equal number of units in the uncompleted portion of the power station. The operation of the present installation to full capacity requires a flow greater than the natural low-water discharge of the river past the plant.

The entire output of both the above-mentioned plants is transmitted to the city of Winnipeg for distribution for general industrial, lighting, domestic, power, and traction purposes. That this power demand is increasing, is conclusively shown by load growth curves of the city of Winnipeg since 1906, i.e., since the inauguration of the first hydro-electric station on the Winnipeg river. The increasing power demand is also indicated by the fact that the city of Winnipeg has installed three 7,000 horse-power turbines since the beginning of 1914, and by the fact that the Winnipeg River Power Company, an allied interest of the Winnipeg Electric Railway Company, has recently secured from the department the right to develop what is known as the Du Bonnet power site. While present financial conditions due to the war have delayed the commencement of actual construction work, the engineers of the company have been continuously engaged for the past eighteen months on the detail construction plans, and have constructed a 13 mile spur railway line connecting the site with Lac du Bonnet station on the Canadian Pacific railway.

The seven undeveloped power sites of the river offer exceedingly favourable opportunities for power development, both from economic and engineering standpoints. The head available at each site, and its distance from Winnipeg, also the power available under present low-water flow, is tabulated hereunder:—

Site.	Distance from Wpg. in miles.	Head in feet.	Continuous 24-hr. power at 75% efficiency under present low flow in Manitoba. (12,000 c.f.s.)
Pine falls	64	37	37,900
Du Bonnet falls	64	56	57,300
McArthur falls	62	18	18,400
Lower Seven Sisters	52	37	12,600
Upper Seven Sisters	55	29	9,900
Upper Pinawa	58	18	12,300
Slave falls	74	26	26,600
Total			175,000

As showing the direct influence of the lake of the Woods on the power resources of the Winnipeg river in Manitoba, and considering only the run-off originating in the watershed above the lake, the following table is of interest:—

Continuous discharge from the Lake of the Woods in sec.-ft.	Corresponding continuous 24-hr. power at 75% efficiency capable of economic development on the Winnipeg river in Manitoba (exclusive of Ontario).
[1] 5,060	106,000
6,000	125,000
[2] 6,770	140,000
7,000	146,000
8,000	167,000
9,000	188,000
10,000	209,000
11,000	230,000
[3]12,000	250,000

NOTE.—[1]Actual recorded minimum mean monthly discharge.
[2]Computed natural mean monthly discharge.
[3]The approximate average flow for period 1907–1914.

The above tabulated powers corresponding to various rates of flow show conclusively the influence which the lake of the Woods run-off has on the Winnipeg river powers in Manitoba. The rates of flow listed can only be ensured by a systematic control of the lake outflow in the interests of power storage. The magnitude of the continuous dependable outflow from the lake is dependent on the storage range permissible.

In this connection it is pointed out that the lake of the Woods has been under regulated conditions since the construction of the Norman dam. While this regulation has been mainly in the interests of navigation, it has been of benefit to the water-powers on the Winnipeg river in Manitoba. Further, the Norman dam has been operated to furnish additional flow to meet the requirements of the Winnipeg Electric Railway Company's power plant; such operation has been effected at the request of the company by arrangement with the Ontario Government and the power interests at the outlets of the lake.

The importance of these large amounts of available, economically feasible, and conveniently located power, to the industrial and commercial future of the population of Manitoba cannot be overestimated.

Growth curves both of population and power load for the city of Winnipeg, during the past nine years, indicate that the entire output of the river in Manitoba will be required by the market of the city of Winnipeg alone within a short period of years, leaving out of consideration all supplementary demands, such as for electrification of railway terminals, for distribution to neighbouring municipalities, for pulp and paper, and for electro-chemical purposes.

There is now a total of approximately $170,000,000 of capital invested in industries in the Greater Winnipeg districts, directly dependent upon Winnipeg river power, which invested capital represents an annual pay-roll of about $24,000,000, a total annual product worth over $135,000,000, and with about 30,000 persons directly engaged therein.

The figures represent only what may be termed industrial and commercial interests for which definite figures could be obtained. They do not include the large interests represented by institutions nor the domestic use of electric light and heat. Light and heat alone account for over 36 per cent of the total connected load.

Winnipeg is peculiarly dependent on hydro-electric power for the following reasons:—

(*a*) On account of the high cost of steam coal ($6 and $7) and gas ($1.50), hydro-electric power has so completely superseded fuel power that the remaining private fuel plants not using hydro-electric power only constitute 3 per cent of the total connected load.

(*b*) Gas is not used for power, and only to a negligible extent for lighting.

(*c*) Compared with nineteen leading cities of similar size in the United States and Canada, Winnipeg has a larger consumption of electricity per capita than any and much larger than most.

Unlike most other cities, Winnipeg does not possess alternative sources of light and power, and is for all practical purposes entirely dependent upon hydro-electric power for light, power, traction, and water supply.

Since cheap hydro-electric power became available in 1907, the use thereof has increased 513 per cent, while the population increased 102 per cent.

The only source of hydro-electric power in sufficient quantity and within practicable transmission radius is the Winnipeg river.

The present rates, compared to the average of rates charged in other cities, meant, in 1914, an annual saving to the Greater Winnipeg community of over $3,000,000, and this will, of course, increase annually with the growth of population.

It is, therefore, submitted:—

(*a*) That the only available source of hydro-electric power for Winnipeg is the Winnipeg river.

(*b*) That the Winnipeg river offers unusual natural advantages for the development of power.

(*c*) That these advantages have already been utilized to the extent of 81,000 horse-power actually installed turbine capacity.

(*d*) That the power available on the Winnipeg river in Manitoba dependent upon the flowage of the lake of the Woods, ranges from 106,000 to 250,000 24-hour continuous horse-power at 75 per cent efficiency, corresponding to various rates of flow ranging from the actual recorded minimum mean monthly flow.

(*e*) That it is only a matter of comparatively short space of time before all the available power will be required and developed.

(*f*) That there is no alternative source of power and, for all practical purposes, Winnipeg and district is entirely dependent upon hydro-electric power for light, traction, and water supply.

(*g*) That there is at the present time directly dependent upon the portion of the total capacity of the river now developed, capital invested in industries to the extent of about $170,000,000.

(*h*) That the tremendous present and future potential value of these water-powers on the Winnipeg river in Manitoba requires that the flow from the lake of the Woods be regulated to the greatest possible extent.

(*i*) That such regulations can only be attained by a satisfactory storage range on the lake.

The conclusion which the engineers of the Dominion Water-power Branch respectfully submit as a result of a study of the run-off records of the watershed and the requirements of the power interests on the Winnipeg river in Manitoba, is that at least a 6-foot storage range on the lake is necessary if its reservoir capacity is to be utilized to the best advantage in the interests of the water-powers of the river below.

J. B. Challies,
Supt. Dominion Water-power Branch.

The final hearing of the argument of counsel representing the governments, and the various power and private interests affected, will be heard in Washington, early in April.

The engineers of this branch have, without reservation, afforded the consulting engineers to the commission, and the engineers of the various private interests affected by the reference, every possible assistance by securing for them all the essential data covering the hydrometric and topographic conditions of the watershed, and the physical features of the various developed and undeveloped power sites. These data will subsequently appear in the report of the consulting engineers to the commission, and from the main part of it, co-ordinated with certain other data secured independently.

In connection with this reference, particular mention should be made of the services of Mr. S. S. Scovil, formerly Assistant Chief Engineer of the Manitoba Hydrometric Survey, and for some time engineer for the Lake of Woods Technical Board. Having lived in the Lake of the Woods district for many years, Mr. Scovil was thoroughly familiar with the whole situation. Since the reference was formed, he has devoted practically all his time to the Government in studying the whole matter. All the field work and office computation of this branch regarding the reference have been carried on under his supervision. The fact that the case of the Canadian Government and the various Canadian interests can be presented to the International Joint Commission in April next, in a satisfactory manner, is very largely due to Mr. Scovil's expert and complete knowledge, and to his untiring efforts to assist and advise any one interested in the reference.

WATER-POWER LANDS CANNOT NOW BE SOLD.

In recent years, and especially this last year or so, the policy of the Government with respect to the control and administration of water-powers in the western provinces has become firmly established. The trend of opinion has been toward more strict and stringent amendments to the regulations, which will provide for the complete and permanent control by the Crown of water-powers, both developed and undeveloped. Essential to such complete control, is the retaining of title by the Crown of water-powers. To provide for this beyond doubt, section 35 of the Dominion Lands Act was amended at the last session, to absolutely prevent the sale, occupation, or disposition in any other way, except under the Water-power Regulations, of lands valuable in connection with water-power development.

RE-PURCHASE OF SILVER FALLS LANDS.

The necessity for the Crown retaining control of lands valuable for water-power purposes necessitated some action on the part of the Dominion Government to recover certain lands dominating one of the most important power sites on the river, namely, that at Silver falls, sold in 1906 to certain Chicago interests under a ten-year time sale.

This sale was authorized in the regular way, by Order in Council, upon the urgent representation of many parties interested in securing an adequate supply of power for Winnipeg that it would be advisable to have these lands sold to the highest bidder, title in fee simple to be issued upon completion of final payment of the sale. The sale was held in Winnipeg, in September, 1906, when the late Judge Cummins, representative of the H. M. Byllesby Company, of Chicago, one of the largest public utility corporations in the United States, outbid everybody and obtained the property. It was the intention of this corporation to promote and carry to completion the construction of a large modern power plant on the Winnipeg river, with a view to supplying the growing demand for hydro-electric energy in and around Winnipeg,

and a sum approximating $70,000 was spent in engineering and investigating work on the river. The project, however, was not proceeded with, and the power market at Winnipeg has since been fully supplied by the plants of the Winnipeg Electric Railway Company, and the municipal development of the corporation of Winnipeg.

When the sale of these properties was carried out ten years ago, there was no well-defined policy of water-power administration. Since that time the Dominion Water Power Branch has been created for the express purpose of investigating and carrying out the administration of the water-power resources of the western provinces.

One of the first departmental acts of the undersigned, in connection with water-power administration, was to point out the inadvisability of the sale of the Silver Falls properties to the Byllesby Company. Tangible results, however, could not be realized until the present water-power policy became more thoroughly understood, and the necessity for the Dominion Government retaining absolute control of undeveloped power sites as well as developed power sites became apparent.

As the particular parcels referred to dominated one of the most important undeveloped power sites on the Winnipeg river, if a fee simple title had been conveyed in the form of patent in vogue at the time of the auction sale, which form of patent did not reserve the rights of the Crown in the bed of the stream, and which form of patent the purchasers would probably have had some right to claim, the Dominion would have lost direct control over the Silver Falls power site.

There was, however, more involved than the natural fall of the river at Silver falls. The extensive and elaborate scheme of power concentration along the stretch of the river between lac du Bonnet and lake Winnipeg, worked out after several years' investigation by the engineers of this branch, involves a method of development which contemplates three concentrations of the natural fall of the river, at Pine falls 63,100 horse-power, at Great falls 95,500 horse-power, and at Lower McArthur falls 30,700 horse-power, all in terms of continuous 24-hour power. The Pine Falls concentration scheme contemplates the use of the natural fall of the river at Pine falls, Silver falls, and part of Whitemud falls.

If the larger portion of this natural fall of the river, that at Silver falls, were alienated from the Crown, it would be impossible for this concentration scheme to be carried out. Instead of one concentrated development with a total head of 37 feet, there would have to be at least two. The capital construction cost per horse-power would be very considerably increased in each case, and most important of all, it is probable that a very considerable portion of the natural fall of the river could not be taken advantage of for power purposes at all. It was absolutely necessary, therefore, from both a conservation and an administrative standpoint, that some action should be taken with a view to retaining the control of the Crown in the Silver Falls power site.

The whole situation was frankly placed before Mr. H. M. Byllesby, president of the H. M. Byllesby Company of Chicago, by the undersigned, when the point of view of the Dominion Government, its system of water-power administration and the results of the investigations of this branch along the Winnipeg river were frankly explained. Mr. Byllesby met the representations of the undersigned in an exceedingly considerate and conciliatory manner, and agreed to surrender all the interests of the H. M. Byllesby Corporation in these parcels upon the Government refunding to him the actual sums paid to the department to date for these lands, without interest. But one condition was stipulated, that the re-purchase was to be carried out at once. Parliament not being in session, and the case being urgent, arrangements were accordingly made for securing the necessary funds to re-purchase these properties, some $100,188.51, by Governor's Warrant.

At the same time an option was secured by the Government to re-purchase, for $2,636, about 700 acres of lands previously patented to the Byllesby Company by the

province of Manitoba. These lands are valuable in connection with the Grand Du Bonnet (Great Falls) site. The option expires on the 10th of May next, and steps are being taken to have it exercised.

No better example could be had of the readiness and willingness of large public utility corporations to co-operate with Government officials in proper conservation and administration of water-powers, when treated frankly and fairly.

POWER AND STORAGE INVESTIGATIONS IN THE PROVINCES OF ALBERTA AND SASKATCHEWAN.

During the past year this work has mainly consisted of investigations of water-power applications, some general reconnaissance work, and the completion of special survey work in various parts of the two provinces. A report on this work by Mr. C. H. Attwood, chief engineer in charge, will be incorporated in a full report of this branch.

ELECTRICAL FIXATION OF ATMOSPHERIC NITROGEN.

The attention of the branch has been repeatedly called to the question of electrical fixation of atmospheric nitrogen for the production of nitrous compounds, both for explosive products for war purposes, and for fertilizing products for the prairie lands. The whole matter has been gone into very carefully by Mr. A. M. Beale, B.Sc., whose complete memorandum will be published in the full report of this branch.

The outstanding features of the fiscal year just ending, so far as the Dominion Water Power Branch is concerned, are:—

(1) The amendment to the Dominion Lands Act to prevent the disposition in any other way except under the water-power regulations, of lands valuable for water-power purposes.

(2) The re-purchase, for $100,188.51, by the Government, of the land dominating Silver Falls site on the Winnipeg river, thereby ensuring, for all time to come, the control by the Government of all the natural fall on the Winnipeg river, between Lac du Bonnet and lake Winnipeg, representing a total power capacity, under regulated flow, of 190,000 continuous 24-hour horse-power.

(3) The commencement of investigations of the water-power resources of the province of Nova Scotia, under a co-operative agreement with the Nova Scotia Water Power Commission.

(4) The completion and installation of the water-power exhibit in the Canadian Pavilion at the Panama Pacific International Exposition, and the participation by Canadian engineers, in co-operation with the engineers of this branch, in the proceedings of the water-power section of the International Engineering Congress, held at San Francisco during the Panama Pacific International Exposition.

(5) Completion of the extensive power and storage investigations on the Winnipeg river, by Mr. J. T. Johnston, chief hydraulic engineer of the branch.

(6) Satisfactory progress of the presentation of the water-power case before the International Joint Commission in the Lake of the Woods Reference.

These matters represent substantial progress in our regular work, and the achievement of far-reaching and advantageous results along new channels. The scope and usefulness of the branch is extending in a very gratifying way.

J. B. CHALLIES,
Superintendent.

No. 2.

REPORT OF CHIEF DRAUGHTSMAN.

This is a statement of the work done under my direction for the fiscal year of 1915-16.

DRAUGHTING WORK.

The preparation of original plans, maps, and diagrams to illustrate the reports of the branch is the most important work of this office. When maps and plans are to be reduced by photography the amount of reduction must be kept in mind by the draughtsman. On maps and plans, letters and figures which have been over-reduced become illegible, and fine lines almost indiscernible. To offset this difficulty the draughtsman must make his letters and figures large enough and his lines heavy enough so that when they are reduced they will be clear and legible. The draughtsman must plan his work to suit the subsequent operations of the photographer and the lithographer; in view of this the draughting room may be looked upon as having an interest in the plan throughout the printing process. Proofs of all plans are read here, and the instructions as to the photographic reduction and details of lithographing given. One hundred and ninety-eight plans were reproduced during the year. In addition to the above, many small diagrams and sketches were prepared to accompany memoranda and reports of the branch that were not published for distribution.

Filing of Official Plans.—The indexing and filing of plans of value take up considerable time. As soon as a plan is completed it is given a record number and tied in to the branch file. There are now nearly fifteen hundred plans filed for official record and future use.

A list of plans and maps prepared for publication during the past year is appended herewith.

THE PUBLICATION AND DISTRIBUTION OF REPORTS.

The work under this heading divides itself into three parts: first, issuing of reports embodying the results of investigations by the various members of the staff; second, the distribution of the same; and third, the preparation of press bulletins.

The following table gives details regarding the number and size of the various publications issued during the year:—

Publications.	Water Resources Paper No.	No. of Pages.	No. of copies.	Number Illustrations	No. of Plans and Maps.
British Columbia Hydrometric Survey Annual Report for 1914	14	534	2,500	22	1
Dominion Water Power Branch Annual Report for year ending March 31, 1914	.....	309	2,500	104	45
Separates of Annual Report:—					
(1) General Guide for the Compilation of Water Power Reports and Survey of Field Data	10	31	1,500	.....	11
(2) Pasquia Reclamation Project	11	36	500	4	22
(3) Small Water-powers	12	43	500	9	
(4) Coquitlam-Buntzen Hydro-Electric Development, British Columbia	13	51	1,500	27	12
Regulations governing Water-power Rights in the Provinces of Manitoba, Saskatchewan, Alberta and the North West Territories	.....	14	1,000	.....	
Special Reports:—					
Monographs of the Water-powers of Canada—					
(1) Maritime Provinces	.....	36	5,000	31	
(2) Province of Quebec	.....	36	5,000	25	1
(3) Province of Ontario	.....	42	5,000	24	
(4) Prairie Provinces	.....	80	5,000	53	1
(5) Province of British Columbia	.....	170	5,000	183	1
Reprints of the Monographs on the Water-powers of Canada	16	316	2,400	315	3
Winnipeg River Power and Storage Investigations	3	.....	.....	.....	
Volume 1	.....	511	5,000	79	89
Volume 2	.....	3	5,000		57
		2,212			

During the year a rearrangement was made in the printing of the daily gauge-height and discharge tables of the hydrometric data accompanying our various reports. Instead of the year's readings taking two full pages, the heading has been dropped from the second half of the year and the whole of the table printed on one page. The result has been a considerable saving in the cost of publishing the various reports, and the appearance is greatly improved.

In addition to the above there is in press the Manitoba Hydrometric Survey Report to the end of the calendar year 1914, and known as Water Resources Paper No. 4, and a reprint of the Water-power Regulations. There is also, in preparation, a report of the Red River Navigation Surveys, by S. S. Scovil, B.Sc., Assistant Engineer of the Manitoba Hydrometric Survey, known as Water Resources Paper No. 9, a report of the water-powers of Alberta and Saskatchewan, by C. H. Attwood, O.L.S., Chief Engineer, Alberta and Saskatchewan Power Surveys, known as Water Resources Paper No. 15, the annual report of the British Columbia Hydrometric Survey for 1915, by R. G. Swan, B.Sc., Chief Engineer, known as Water Resources Paper No. 18, and the annual report of the Manitoba Hydrometric Survey for 1915, by M. C. Hendry, B.Sc., known as Water Resources Paper No. 19.

Appended is a classified list of the reports issued by this branch.

Distribution.—The reports of the branch are meeting with such increased demand that much care has to be exercised in their distribution. The mailing lists are kept carefully revised to avoid waste. The names on the mailing list now number 1,800 and comprise such classes as technical journals, libraries, universities, boards of trade, engineering societies, and individuals interested in hydro-electric power, irrigation, and water supply. Nine thousand reports were distributed during the year.

The Preparation of the Press Bulletins.—During the time the various reports are in press the authors are asked to prepare a synopsis of the report for press purposes. A copy of this, along with an advanced copy of the report, is sent to all the leading technical journals in Canada, United States, and Great Britain. In this way our reports have been brought to the attention of engineering and financial interests in Canada and other countries, and requests for copies are numerous. Not only do these journals compliment the department on the value of the information available, but also on the style and orthography of our various publications.

PHOTOSTAT ROOM.

The work of the photostat room shows an increase as compared with last year. This is principally in the smaller sizes of artura prints, blue-prints, and bromide enlargements. The increase in artura prints is mainly due to the amount of field work taken over by this office. The blue-print work is entirely new and consists of prints from plate negatives which cannot be done by the blue-print machine. The plates are copies of large plans reduced to convenient size for binding in the branch reports. Blue-prints are found to be more satisfactory for this work than the various coated printing papers because they fold neatly in the report and are not liable to cut. They take the water colours evener than the various photographic papers.

The increase in enlargements is accounted for by the number of sepia bromide prints that were prepared in this office for the display in the Dominion Water Power Exhibit at the Panama-Pacific Exposition held in San Francisco during 1915, and the number of enlargements in black and white prepared for the Commissioner of Dominion Parks.

STATEMENT of work executed in the Photostat Room, April 1, 1915, to March 31, 1916.

	3¼ x 4	3¼ x 3½	3¼ x 5½	5 x 7	8 x 10	11 x 14	16 x 20
Photostat prints						2,460	
Dry plates and films		36		468	64	112	
Artura prints			4,756	2,304	250	288	
Blue prints						600	
Bromide enlargements							324
Lantern slides	210						
Totals	210	36	4,756	2,772	314	3,460	324

The work on the photostat has been brought to such a degree of efficiency that the process has been investigated by different branches of the service, and several new machines installed.

Special work has been carried on during the year for the Imperial Munitions Board, the Wireless Branch of the Naval Service Department, and Mr. Watson Griffin, Special Trade Commissioner of the Department of Trade and Commerce.

At the request of the Prime Minister, lantern slides of typical water-power development and undeveloped water-powers in Western Canada were furnished to Mr. L. O. Armstrong, Bureau of Commercial Economics, Washington, D.C., for a series of lectures in the United States on Canadian Natural Resources.

In February last the undersigned attended the Eastman School of Professional Photography, held in Toronto, February 27, 28, and 29. Here many important points, including new methods for photographing coloured maps and plans, were discussed with the demonstrators at the school. These discussions assisted in clearing up many difficulties which had been previously encountered in our work, and altogether much valuable information was received.

B. E. NORRISH,
Chief Draughtsman.

SESSIONAL PAPER No. 25

CLASSIFIED LISTS OF REPORTS OF THE DOMINION WATER POWER BRANCH.

The reports published by the Dominion Water Power Branch with the exception of the Annual Reports, have been called Water Resources Papers, and have been numbered 1, 2, etc.

Annual Reports.

Annual Reports previous to 1913 are included with the Annual Report of the Department of the Interior, and can be secured from the secretary of the department.

Annual Report for 1912-13, published 1914. Out of print.

Annual Report for 1913-14, published 1915.

Annual Report for 1914-15, published 1916.

Annual Report for 1915-16, in press.

Water Resources Papers.

Water Resources Paper No. 1.—Report of the Railway Belt Hydrometric Survey for 1911-12, by P. A. Carson, B.A., D.L.S., Chief Engineer. Published 1914.

Water Resources Paper No. 2.—Report of Bow River Power and Storage Investigations (Bow river west of Calgary), by M. C. Hendry, B.A.Sc., Chief Engineer in charge of surveys. Published 1914.

Water Resources Paper No. 3.—Report on Power and Storage Investigations, Winnipeg river, by J. T. Johnston, B.A.Sc., Chief Hydraulic Engineer, Dominion Water Power Branch. Published 1915.

Water Resources Paper No. 4.—Report of the Manitoba Hydrometric Survey to end of year 1914, by M. C. Hendry, B.A.Sc., Chief Engineer. Published 1916.

Water Resources Paper No. 5.—Preliminary Report on the Pasquia Reclamation Project, by T. H. Dunn, C.E., O.L.S., Chief Engineer in charge of Reclamation Survey. Published 1914. Out of print.

Water Resources Paper No. 6.—Report on cost of various sources of power for pumping in connection with the South Saskatchewan Water Supply Diversion Project, by H. E. M. Kensit, M.I.E.E., and Mem. Am. Inst. E.E., Mem. Can. Soc. C.E. Published 1914. Out of print.

Water Resources Paper No. 7.—Report on the Manitoba Water Powers, by D. L. McLean, S .S. Scovill and J. T. Johnston, compiled for the Manitoba Public Utilities Commission. Published 1914.

Water Resources Paper No. 8—Report of the British Columbia Hydrometric Survey for 1913, by R. G. Swan, B.A.Sc., Chief Engineer. Published 1915.

Water Resources Paper No. 9.—Report of Red River Navigation Surveys, by S. S. Scovil, B.Sc., Assistant Chief Engineer of Manitoba Hydrometric Survey. In course of preparation.

Water Resources Paper No. 10.—General Guide for Compilation of Water Power Reports of Dominion Water Power Branch, prepared by J. T. Johnston, B.A.Sc., Chief Hydraulic Engineer. Published 1915. Limited edition.

Water Resources Paper No. 11.—Final Report on the Pasquia Reclamation, by T. H. Dunn, C.E., O.L.S., Chief Engineer in charge of Reclamation Survey. Published 1915.

Water Resources Paper No. 12.—Report on Small Water Powers in Western Canada and discussion on sources of power for the Farm, by A. M. Beale, B.Sc. Published 1915.

Water Resources Paper No. 13.—Report on the Coquitlam-Buntzen Hydro-Electric Development, by G. R. G. Conway, M. Inst. C.E., M. Can. Sc. C.E., Chief Engineer of the British Columbia Electric Railway Company, Limited. Published 1915.

Water Resources Paper No. 14.—Report of the British Columbia Hydrometric Survey for 1914, by R. G. Swan, B.A.Sc., Chief Engineer. Published 1915.

Water Resources Paper No. 15.—Report on the Water Powers of Alberta and Saskatchewan, by C. H. Attwood, O.L.S., Chief Engineer Alberta and Saskatchewan Power Surveys. In course of preparation.

Water Resources Paper No. 16.—Water Powers of Canada. A series of five pamphlets in one volume covering the water power situation in Canada prepared for distribution at the Panama-Pacific Exposition, San Francisco, 1915, by G. R. G. Conway, Consulting Engineer, Toronto, Percival H. Mitchell, E.E., Consulting Engineer, Toronto, H. G. Acres, Hydraulic Engineer Hydro-Electric Power Commission, Ontario, F. T. Kaelin, Assistant Chief Engineer, Shawinigan Power Co., Montreal, Quebec, K. H. Smith, Engineer, Nova Scotia Water Power Commission, Halifax, N.S. Published 1916.

Water Resources Paper No. 17.—Canadian Hydraulic Power Development and Electric Power in Canadian Industry, by Charles H. Mitchell, C.E., Consulting Engineer of Dominion Water Power Branch. In press.

Water Resources Paper No. 18.—Report of the British Columbia Hydrometric Survey for 1915, by R. G. Swan, B.A.Sc., Chief Engineer. In course of preparation.

Water Resources Paper No. 19.—Report of the Manitoba Hydrometric Survey for 1915, by M. C. Hendry, B.A.Sc., Chief Engineer. In course of preparation.

No. 3.

REPORT OF THE ACCOUNTANT.

ACCOUNTS.

For the better administration of the Dominion Water Power appropriation, the fiscal year is divided into four periods, each of three months. Advances are made to each of the chief engineers in charge of field parties, upon their furnishing the office at Ottawa with a statement on a prescribed form, showing in detail for what purposes the advance is required. At the end of each period of three months the accounts covering the expenditures of the period are prepared and submitted to the Ottawa office, together with the requisition for a further advance to cover the succeeding period. Upon the receipt of these accounts in Ottawa, they are carefully checked and, when considered to be in order, are submitted to the superintending accountant for final examination.

The following statement shows the number of accounts dealt with during the year, the total amount of such accounts and the number of cheques forwarded:—

Number of accounts dealt with	628
Amount of accounts	$174,757.37
Number of cheques forwarded	985

APPROPRIATIONS.

The sum of $194,000 was appropriated by Parliament to defray the costs of the administration and investigation of water-powers under the water-power regulations during the past fiscal year. The provincial legislatures of British Columbia and Nova Scotia have assisted us to the extent of five thousand and three thousand dollars respectively, under a co-operative arrangement arrived at with each of the provinces mentioned.

Under authority of an Order in Council dated October 15, 1915, a Governor's warrant was issued for the sum of $100,188.51 to extinguish the rights of the estate of the late J. S. Cummins to certain Dominion and school lands necessary to the regulation of the comprehensive departmental power scheme for the development of the water-power of the Winnipeg river, and to pay to the School Lands fund the amount still due on the school lands, together with interest to November 1, 1915. This transaction has been completed, with the result that the lands affected have reverted to the Crown to be reserved for the better development of certain reaches of the Winnipeg river. The amount covered by the Governor's warrant was subsequently included in the supplementary estimates for the fiscal year 1915-16, and was eventually voted under Supply Bill No. 104 (6-7 George, chapter 29).

PERCY WILKINSON,
Accountant.

No. 4.

REPORT ON GENERAL ADMINISTRATION.

This is a report of the work carried on under my supervision during the year ending March 31, 1916. It naturally divides itself into two distinct sections, that carried on in the office and that in the field.

NEW DOMINION WATER-POWER REGULATIONS.

The work which was probably of greatest importance was that of drafting the new proposed water-power regulations, which were prepared under the immediate direction of Mr. H. W. Grunsky. These regulations for the administration of all water-powers under the control of the Dominion Government have been taken up with a great deal of care and thought. Much of the matter which has been incorporated therein would more appropriately be embodied in the statute itself, but in view of the fact that many of the principles incorporated therein are new, it was considered more advisable to first give these principles a trial as regulations, after which they may be incorporated in the statute in more perfect form.

Considerable time was spent in studying the water-power laws which are in operation in countries where the water-powers are being largely developed, and to ascertain whether the more advanced legislation was being satisfactorily carried out. In our draft regulations an effort has been made to embody the ideas set out in the most modern legislation, in so far as the same is adaptable to conditions in this country. It has been borne in mind that capital should be fairly treated, and nothing should be included therein which would deter it from investigating and developing our large power sites. On the other hand, the absolute disposition for all time of our resources without proper restrictions in order that they might be immediately developed would be equally unfair to the coming generations. It is hoped that the new regulations may be finally approved and put in operation within a short time. When this has been done, the course of procedure in all water-power applications will be definitely set out and the work of administration greatly simplified.

REGULATIONS FOR LANDS REQUIRED IN CONNECTION WITH WATER DEVELOPMENTS IN THE BRITISH COLUMBIA RAILWAY BELT.

The Dominion Government, by the Railway Belt Water Act, 1912, amended 1913, transferred the administration of all the waters in the Railway Belt to the province of British Columbia. This subject has been fully dealt with in a report by Mr. H. W. Grunsky, which will be incorporated in the annual report of this branch. In 1914 that province passed a new Act for the administration of all waters in that province, known as the "British Columbia Water Act, 1914." This Act was not operative in the Railway Belt, it being necessary that it should be first approved by the Dominion authorities. Hence an Order in Council was prepared, recommending that this Act should be ratified and adopted for the administration of Railway Belt waters. This order was passed on the 27th February, 1915.

All Dominion lands in the Railway Belt, including those required for the operation of water grants, are administered by the federal authorities. The regulations

for the administration of these lands did not contain any special regulations for the disposal of lands required by water users. In a great many cases Dominion lands had been occupied and small dams and ditches constructed without any authority whatever from this department. To have permitted this practice to continue would have resulted in chaotic conditions in cases where land is required for water rights. Already difficulties had arisen in cases where the department had not been informed of provincial water rights granted and where the grantee has constructed works without the consent of the Dominion Government.

In order to prevent the recurrence of the same it was necessary to draft regulations to provide for the administration of the lands required for the carriage, diversion, and storage of water, or for the construction of any works in connection therewith. Draft regulations were prepared by Mr. Grunsky and myself which have been approved by the Superintendent of British Columbia Lands, Mr. S. Maber, and so far as this branch is concerned, are ready for approval. The Comptroller of Water Rights, Victoria, however, raised certain points which have not yet been settled, but it is expected that the whole matter will be finally adjusted shortly. With the adoption of these regulations the work of administering the lands required for the operation of provincial water licenses should be conveniently and systematically handled without embarrassment to the water users.

It was not considered advisable, however, to withhold all land rights until these regulations had been adopted, as such a policy would involve a hardship on many settlers and prevent them irrigating their lands. In the case of applications for rights of way for small ditches, of which there were quite a number, and where the applicant desired to immediately commence construction, temporary rights of entry were granted. These permits definitely set out that the rights granted were of only a temporary nature and that an inspection and survey must subsequently be made. If the location and the works were found satisfactory, the department might then issue a new lease or license of occupation.

The work of investigating these rights of way and laying out the same is one which will be required to be carried on during the coming season, and will probably take several months. In the meantime, however, the irrigators are not being unduly hampered, but are permitted conditionally to proceed with the construction of their works.

PROVINCIAL WATER APPLICATIONS AFFECTING DOMINION LANDS.

A most important question which arose during the year was in regard to applications made to the provincial authorities for the use of water in the Railway Belt which required the use and occupation of Dominion lands. In the past this department has received no information whatever regarding such applications until the issuance of permits or licenses by the Provincial Government. This was not found satisfactory as oftentimes the lands, although vacant at the time the water application was made to the province, would subsequently be homesteaded, and the water licensee was, therefore compelled to arrange a settlement with the homesteader. It was therefore necessary that some arrangement should be inaugurated whereby the water users would be protected. The matter was therefore taken up with the provincial authorities, and after considerable correspondence an arrangement was reached whereby the province was to notify this department upon the receipt of any water applications affecting Dominion lands. Immediately upon the receipt of a notification from the province that such an application has been received, the Dominion authorities cause such reservations in Dominion lands to be made as are, in their opinion, required. If the lands are subsequently disposed of by either homestead entry or sale, such disposition is made, subject to the proper reservations, thus protecting the water user.

LICENSES OF OCCUPATION REQUIRED BY RAILWAY COMPANIES FOR BRIDGE SITES IN THE BEDS OF NAVIGABLE WATERS.

During the year a number of licenses of occupation for rights of way required by the various railway companies in the beds of navigable waters have been dealt with. As the number of these applications has been constantly increasing, it was considered advisable that a definite method of procedure should be adopted for all such cases. Heretofore the number of applications of this nature has been very small, and each was dealt with as a more or less isolated case, without any set method of procedure. A new form of license which provides that the area granted shall be used only for the purpose set forth therein and for only such time as the site is used for that purpose has been adopted. A definite rule has been put in practice which provides that the width of the parcel for which the company is to be granted a license of occupation shall not be greater than the width of the company's right of way on either side of the river adjoining. By the strict adherence to this principle it is anticipated that difficulties with riparian owners on either side of the stream may be avoided. As these licenses of occupation of the beds of navigable waters are merely incidental to the main undertaking of the applicants, the rental charged is the same in all cases, being merely a nominal one. Dealing with these applications in the future will be largely a matter of routine.

THE FINAL SETTLEMENT WITH THE CITY OF WINNIPEG AND THE WINNIPEG ELECTRIC RAILWAY COMPANY.

Another most important matter which has been dealt with was the preparation of the licenses, leases, and other instruments to be entered into between this department and the city of Winnipeg and the Winnipeg Electric Railway Company in connection with their respective power developments at Point du Bois and the Pinawa channel. These matters have been outstanding for upwards of ten years, and it was most desirable that they should be finally adjusted. Carefully drawn-up documents were prepared and discussed at Winnipeg with representatives of the city and the company. It is hoped that as a result of these interviews these two matters may be finally adjusted to the satisfaction of all parties concerned.

REGULATION FOR MAINTAINING THE PURITY OF THE WATER IN FORESTED AREAS.

A subject of great interest which has been before this branch was that relating to the purity of waters in forested areas, and particularly where municipal water supplies were likely to be in any way affected. In logging operations, as generally carried on, no special care appears to be taken regarding sanitary arrangements so far as the purity of the waters is concerned. With the development of the country and the increased population it is essential that something must be done in this connection. The question was taken up with the Timber and Grazing Branch, who realized the necessity of having regulations which would effectively control all timber licensees. Regulations were drafted to meet the requirements, and these were submitted to the Controller of the Timber and Grazing Branch, and are now under consideration. These draft regulations must later be submitted to His Royal Highness the Governor General in Council and, when approved, all licenses when issued by the department will contain clauses by which it is hoped the purity of all waters within the scope of operation of all the licensees will be protected.

RE-PURCHASE BY THE DEPARTMENT OF POWER SITE LANDS AT SILVER FALLS.

The re-purchase, by the department, of the power site at Silver Falls was one of the most important matters dealt with by this branch. The lands at this site were

sold by public auction in 1906 to a citizen of the United States representing one of the largest public utility corporations of that country. The lands were to be paid for in ten equal annual instalments, the last payment falling due last September. It was a matter of utmost importance that these lands should be revested in the Crown in order that the maximum advantageous power development might be obtained from the sites along the river. With the re-purchase of this site, practically the whole stretch of the river, in so far as the same is required for power development, is held by the Crown.

In dealing with this matter many intricate features were encountered. The lands held by the company are not only Dominion lands, but also school lands and provincial lands. In re-purchasing these areas arrangements had to be made so as to provide for the school lands endowment fund, which is a trust fund held by the Dominion, and, in any disposition of the land this fund could not be allowed to suffer. Hence, in purchasing the same it was necessary that this department should arrange for making any further payments which were due to this fund.

Most satisfactory terms were arranged for the re-purchase of these areas whereby the company were to revest in the Crown all claims which it had in the lands about Silver falls, upon the payment by the department of the moneys actually paid by the purchaser without any interest upon the same. This arrangement was approved by the Governor in Council, who authorized that such sums should be paid to the holders of these areas upon their revesting in the Crown all interests or claims they held therein. The sale was thereupon satisfactorily completed. Although the amount of money involved appears to be a large one, being slightly in excess of one hundred thousand dollars, still the benefit which will accrue by the complete control by the department of all the power sites along this river makes the investment really a small one. One company holding a single site would be in a position to seriously interfere with the whole scheme of development along the river. Altogether it seems most fortunate that an agreement could be made whereby the department was enabled to re-purchase these lands at no greater cost than that for which they were sold.

In order to prevent any disposition of these lands, and to prevent any one obtaining any right therein, an Order in Council was passed which provided that these areas might not be sold or leased or otherwise disposed of except under the Dominion Water Power Regulations.

OUTSIDE WORK.

One of the most important aspects of water-power administration, is that relating to the land required for site of works, and for flooding purposes. Where the power site is in unsurveyed territory, it is a comparatively easy and simple matter to have located the exact areas necessary for power purposes. On the other hand, where the power site is located in surveyed territory, it is often very difficult to secure all the land necessary for power purposes, on account of it having been disposed of under the provisions of the Dominion Lands Act. Along some of the more important rivers, such as the Winnipeg in Manitoba and the Bow in Alberta, the department has had some very complicated land situations to solve. Some of these situations have entailed expenditure, as in the Silver Falls case, of a considerable sum, to recapture the properties once owned by the Dominion, and since alienated in some form or other.

In order to prevent, as far as possible, the alienation of land valuable for water-power purposes, the branch has been endeavouring to arrange to have all land required for power purposes, first reserved in a general way, and subsequently accurately defined by Dominion Lands survey. This procedure has been made doubly necessary owing to the amendment to the Dominion Lands Act, section 6, chapter 27 of 4-5 George V, which provides that land valuable for power purposes must not be sold, but may only be leased under the provisions of the Dominion Wate-power Regulations.

The actual location of lands valuable for water-power purposes can seldom be made until the scheme of development has been definitely decided upon. This is often a matter of several years' careful topographic and hydraulic surveys. The practice of the branch has been to reserve, by Order in Council, all land contiguous to a power site which it could reasonably be expected, would be ultimately required for the development, and to, as soon as possible afterwards, define the exact areas that will be necessary. For various reasons it is impossible to make surveys in cases which involve immediate decision, and some very important survey work has, of necessity, had to be postponed.

All this Dominion Lands survey work has come under the immediate direction of the undersigned. The work that it has been possible to accomplish to date has been done with the assistance of Mr. A. M. Beale.

Last season the work carried out was at Grand Rapids, which is situated about two miles from the mouth of the Saskatchewan river, and where there is a very valuable power site. Before the construction of the transcontinental railway lines, Grand Rapids was quite an important trading post, being situated on the water-route between Edmonton and Winnipeg. Here the Hudson's Bay Company had constructed valuable buildings and a short tramway across the portage in order to avoid the rapids. To-day there is a small Indian reserve on the right bank of the river, and on the left bank a settlement of between 100 and 150 half-breeds who, with a few white men, make their living trapping, trading, and fishing.

A careful investigation was made and it was found that the lands upon which some of the half-breeds proposed, and in some cases had commenced, building their homes would be required in connection with the proposed water-power development. Other suitable parcels had therefore to be found for them. To meet their requirements between thirty and forty lots were laid out, each lot containing from five to twelve acres, which was considered sufficiently large for their requirements, and which satisfied the natives.

In order to meet the future needs of any incoming settlers, the northerly two-thirds of township 48, range 13, and easterly tier of sections in the northerly two-thirds of township 48, range 14, west of the principal meridian were subdivided. A number of old lots which had been previously surveyed were retraced and the monuments renewed. Both banks of the Saskatchewan river were traversed and ties were made to the Dominion water-power surveys which had previously been made. With the information which was obtained it is possible to definitely describe the lands which require to be reserved for power development purposes.

While at Grand Rapids the highest stage of the waters of the Saskatchewan river was reached, and as it was desirable to have a record of the maximum flow, arrangements were made for measuring the same. Although the equipment available was of a rather primitive nature, still, very satisfactory results were obtained.

The work at Grand Rapids was completed on the 17th of October, just in time to catch the last boat for Selkirk, where we arrived on the 19th of October.

W. E. WELD.

No. 5.

REPORT OF THE CHIEF HYDRAULIC ENGINEER.

This report covers the field organization and general administration and executive work carried on under the jurisdiction of the Dominion Water Power Branch during the past year.

HYDROMETRIC SURVEYS.

The regular stream measurement work has been continued in the provinces of British Columbia and Manitoba, while new ground has been broken in the province of Nova Scotia, where in co-operation with the Nova Scotia Water Power Commission, a systematic policy of stream measurement and power investigation has been inaugurated and maintained.

BRITISH COLUMBIA HYDROMETRIC SURVEY.

The British Columbia Hydrometric Survey, under Mr. R. G. Swan as chief engineer, has continued operations along the lines outlined in last year's annual report.

The greater portion of the work has been, as heretofore, in the Railway Belt and in the southern and more settled portions of the province, particular attention being given to the power rivers and to the contentious irrigation streams. A beginning in stream measurement work has been made on the more important rivers in the central and northern portion of the province, more particularly in the vicinity of the new railway lines. As reliable stream measurement data form the basis of all power investigation, and as the rivers in this district will, within a short time, become the power centres for the development of this portion of the province, it is essential that accurate and continuous records of the stream flow be made available from the earliest date possible. In this way only will efficient and economic power development be assured, and future mistakes avoided. A considerable number of stations have been established in this territory, as is set out in Mr. Swan's report, and it is considered that a satisfactory beginning has been accomplished.

During the season Mr. Swan made a reconnaissance investigation into the power resources of the Yukon Territory.

The entire operations have been curtailed to a considerable extent, owing to the enlistment of a large percentage of the staff for overseas service. This has necessitated the abandonment of a few stations and the securing of a fewer number of measurements at others. However, in view of the greater efforts put forth by the remaining members of the staff, the work has not suffered to the extent which might have been anticipated, and it is not considered that any data essential to pressing problems have been left ungathered.

The hydrometric staff has continued its co-operation with the British Columbia Lands Branch and with the Dominion Parks Branch, inspecting and reporting on engineering problems in the Railway Belt in connection with irrigation and drainage projects, foreshore applications for leases in connection with quarrying, the removal of sand and gravel, and marine docks and elevators. Investigations into water supply projects have been continued, and several problems reported on, while co-operation with power interests in the various parts of the province has been continued on a satisfactory basis. The Provincial Water Rights Branch and the Hydrometric Survey have continued their co-operation with mutually satisfactory results.

The staff has also continued to supply the Conservation Commission of Canada with extensive run-off and water-power data in connection with the rivers of the province.

The stream measurement report for the year 1914 has been published as "Water Resources Paper No. 14." Material for the report covering the year 1915 is now prepared and will be submitted to the printers in the course of a few days. It will be published as "Water Resources Paper No. 18."

These reports are available for distribution to all interested in problems affected by the run-off of the rivers in British Columbia.

MANITOBA HYDROMETRIC SURVEY.

The regular stream measurement work in the province of Manitoba has been continued throughout the year under Mr. M. C. Hendry as chief engineer.

Owing to the enlistment of a very high percentage of Mr. Hendry's staff for active service overseas, it has been necessary to curtail the work in certain areas, and also to reduce the number of meterings secured at the various stations maintained. As a result, there has been a slight reduction in the field activities; at the same time no situation of importance has been overlooked, and it is considered that the physical data secured have been much more complete and satisfactory than might have been considered possible under the circumstances.

Regular stream measurement stations are maintained on all rivers whose importance demands attention, and which are within reach of transportation facilities. Numerous miscellaneous measurements have been secured on many of the rivers in the more unsettled portions of the province.

The stream measurement work on the Nelson river has been continued, and it is considered that the records there being secured are among the most important secured during the season. The construction of the Hudson Bay railway has brought the Nelson river within touch of the more settled portion of the Dominion, and will undoubtedly lead to a more active interest in the river's unequalled power resources. The construction of the railway has also rendered readily feasible the securing of continuous discharge records.

In connection with the Lake of the Woods reference before the International Joint Commission, discharge records have been continuously secured at the outlets of the lake. The establishment of automatic gauges on the lake and at the head of White Dog falls below Kenora will simplify the securing of accurate run-off data at this point in the future. A member of the staff has been stationed at Keewatin throughout the year, and the data gathered have been submitted from time to time to the consulting engineers of the commission.

The importance of the power interests on the lower Winnipeg river has called for a continuance of the careful discharge measurements which have been secured thereon during the past few years. Particular attention has been given to the discharge down the Pinawa channel to the Winnipeg Electric Railway Company's hydro-electric plant, an automatic gauge being placed at the head of the channel to record the amount of water diverted.

Considerable stream measurement work has been carried on in the headwaters of the Little Saskatchewan river in connection with a possible storage system for the bettering of the low-water flow during the winter months.

The first stream measurement report of the Manitoba Hydrometric Survey to the end of the year 1915 is now in the press, and will be ready for publication in the course of a few weeks. It will be published as "Water Resources Paper No. 4." Material for the report covering the year 1915 is now prepared and will be submitted to the printers in the near future. It will be published as "Water Resources Paper No. 19."

These reports will be available for distribution to all interested in problems affected by the run-off of the rivers in the province of Manitoba.

The Manitoba Hydrometric Survey has co-operated closely with Mr. T. H. Dunn, Reclamation Engineer, in his drainage investigations throughout the province during the past year.

GENERAL NOTES.

The installation of automatic gauges on the more important rivers and at locations, where accurate records are necessary to the solution of pressing and conflicting problems, has greatly increased the effectiveness and efficiency of the field work. There are still several important locations in the various territories covered by the field work at which automatic registers would prove exceptionally useful. Such installations should be made as soon as funds are available.

Valuable records are being secured at the various evaporation and meteorological stations maintained in Manitoba and in the Winnipeg River water shed. The constant accumulation of this data will greatly assist in the solution of the many water storage and water supply problems which are to be anticipated in this district in the future.

RECOMMENDATIONS FOR FUTURE WORK.

It is desirable that a careful study be made of the run-off of the Rosseau and the Red rivers in Manitoba, with a view to determining the effect on the flood flow of the extensive drainage projects which have been under construction in Minnesota immediately south of the international boundary. Complaints have been received from residents along the Rosseau river that excessive flooding has resulted from this drainage construction work. A thorough study of the situation will involve a very careful review of all existing run-off and meteorological records available, and will probably necessitate the installation of additional gauges and gauging stations. The Nelson river work is most important, and it is essential that nothing should interfere with the securing of a continuous record of its discharge. It is most important also that the continuous records, which have been secured on all the principal rivers and streams in the province, should not be interrupted.

With the reduced staff available owing to war conditions, it will be practically impossible to extend the stream measurement work either in British Columbia or in Manitoba. Every effort will, however, be made to maintain all stations at which records have been secured, and it is hoped that no gaps will occur in the more essential data and that there will be no serious interference with the general records.

POWER AND STORAGE SURVEYS.

The regular investigations into power and storage problems have been continued during the year in connection with the administration of water powers throughout Alberta, Saskatchewan, and Manitoba.

MANITOBA.

Considerable attention has been given to the power rivers of Manitoba.

No further field work was necessary along the Winnipeg river in connection with the actual investigation of its power resources. However, steps were taken during the past winter to supplement the existing line of levels along the river by a line of check levels establishing permanent bench-marks throughout the power reach. This work was carried on during the winter months and the stretch of river between Lac du

Bonnet and Fort Alexander has been covered. These permanent bench-marks will form a base for tying in the actual construction work involved in the comprehensive scheme of power development which has been designed and worked out for the power reach.

The final report on the Winnipeg River basin and its power resources in Manitoba has been completed and will be ready for distribution in the course of a few weeks. It is published in two volumes as "Water Resources Paper No. 3."

In the English River portion of the watershed, a detailed investigation has been made into the possibilities of utilizing Lac Seul as a storage reservoir to regulate the Winnipeg river flow. Lac Seul is one of the larger lakes in the watershed, and its importance as a regulating reservoir cannot be overestimated. In view of the conflicting questions which have arisen in connection with the utilization of the lake of the Woods for regulating purposes, it was considered advisable that no time should be lost in determining and arranging for the best use of the storage capacity of Lac Seul, in order to forestall similar conflicting questions arising from the settlement of the district. A reconnaissance survey of the lake has therefore been made, together with a survey of the outlet with a view to the erection of a storage dam. The survey party continued the reconnaissance survey work down the English river as far as Separation lake, making rapid surveys of all waterfalls and rapids en route.

Storage studies have been continued in the upper reaches of the Little Saskatchewan river for the purpose of securing a better regulated flow on the lower river during the low-water season, and thereby benefiting the several power undertakings located thereon.

Reconnaissance surveys were also made of the Grass and Burntwood rivers in the northern portion of the province. These rivers are readily accessible from the new Hudson Bay railway, and applications for water-power privileges on the same have already been received. Both rivers supply excellent power sites for moderate developments.

GRAND RAPIDS ON SASKATCHEWAN RIVER.

The undersigned, in company with Mr. M. C. Hendry, Chief Engineer of the Manitoba Hydrographic Survey, made an inspection of the power reach of the Saskatchewan river in the vicinity of Grand rapids. A power survey of this reach of the river had been made in the summer of 1912 by Mr. E. B. Patterson, acting under the direction of Mr. D. L. McLean, then chief engineer of the Manitoba Hydrometric Survey. Before making final recommendation as to the best method of comprehensive development for the reach of the river in question, the undersigned considered a personal reconnaissance advisable. As a result of the information gathered, the department has been enabled to take a final stand on the general method of power development to be adopted on this reach, in co-ordination with the important navigation and drainage interests which are also involved.

All power survey field work in Manitoba during the past year has been carried out by light reconnaissance parties, and with a minimum of expenditure. The stream measurement was maintained with special reference to these power studies.

ALBERTA AND SASKATCHEWAN.

In the provinces of Alberta and Saskatchewan, power and storage investigations have proceeded under the direction of Mr. C. H. Attwood as chief engineer.

The work carried on is similar in character to the work of preceding years. Several applications for rights to develop small powers for local use have been investi-

gated on the ground and the applicant advised fully of the power available and its suitability for the class of development proposed.

The partially completed hydro-electric plant at Cole falls on the North Saskatchewan river was inspected, particular attention being given to the effect of the excessive flood flow experienced early in July last. The manner in which the existing hydro-electric plants on the Bow river withstood the excessive floods experienced was also investigated.

The more important situations calling for field surveys were investigated, including: the power possibilities of the Peace river at Vermilion Chutes, a power survey of Bow falls on the Bow river at Banff, a power survey of the lower power site on the Spray river at Banff, and a power survey of a portion of Forty-mile creek near Banff.

Data relative to the cost and analysis of coal in the various cities in Alberta and Saskatchewan were also collected by Mr. Attwood. This information is of particular value in estimating the comparative cost of hydro-electric and steam power in the various localities in which the question of hydro-electric development is active.

The general administrative policy of the branch has been continued, that is, that an engineering inspection of all power projects and applications is a necessary preliminary to further action by the department. The information which has been supplied to prospective developers of small water-powers, both in respect to the amount of power to be anticipated and in respect to the type of plant and class of construction best adapted to each particular site, has been eagerly welcomed by the applicants who, as a rule, are settlers of the most progressive type.

RECOMMENDATIONS FOR FUTURE WORK.

The following investigations are called to your attention as being advisable, in the interests of efficient water-power administration in Alberta, Saskatchewan and Manitoba:—

1. The reconnaissance power survey of the English river, which has been carried from Lac Seul to Separation lake, should be continued to the junction with the English river, in order to close the only gap which now exists in the records covering the main branches of the Winnipeg river system.

2. The line of precise levels which has been carried from lake Winnipeg to Lac du Bonnet should be continued so as to cover the entire power reach in Manitoba.

3. Systematic reconnaissance of the water-powers of northern Manitoba should be continued.

4. Systematic steps should be taken looking to the investigation of the rivers and streams of Alberta and Saskatchewan, up to the present uncovered by field work, with a view to definitely determining the total water-power resources of the said provinces.

5. Permanent bench-marks should be established along the Bow river in the vicinity of the developed and undeveloped power sites, so that the records of the power survey may be preserved and available when required.

NOVA SCOTIA POWER AND STORAGE INVESTIGATIONS.

Last year's annual report referred to a co-operative agreement between the Nova Scotia Water Power Commission and the Dominion Water Power Branch looking to the investigation of the power resources of the province of Nova Scotia. The said agreement was duly executed, and Mr. K. H. Smith, an experienced engineer of the Dominion Water Power Branch, was duly appointed to take charge of the field investigations. Mr. Smith has been in continuous charge of the work to date.

The co-operation has been mutually satisfactory to the commission and to this branch, and the amount of work accomplished has been greatly in excess of what was first considered possible with the limited funds available. The commission was furnished with a progress report of the work to September 30 last, that being the end of the provincial fiscal year. This report outlined briefly the scope of the work undertaken and accomplished to that date. The work has since been aggressively continued, twenty-five regular and six miscellaneous stream measurement stations being established on the more important rivers and streams throughout the province. A rough reconnaissance has been made of nearly every portion of the province, in order that the detail work might be more intelligently distributed.

Reconnaissance investigations either wholly or in part have been made of the following streams:—East river, Sheet harbour; West river, Sheet harbour; Liscomb river; St. Mary river; East river, Pictou; Phillip river; St. Croix river; Haspercaux river; Lequille river; Bear river; Sissiboo river; Tusket river; Roseway river; Mersey river; Medway river; Gold river; Indian river, Halifax county; Northeast river, Halifax county; Pennant river, Fall river, Halifax county; Kearney lakes; Sackville river; and Dartmouth lakes.

Complete investigations have been made of the following river basins: Northeast and Indian rivers, proposed developments of the Halifax Power Company; Gaspereaux river, proposed development of the Nova Scotia Tramways and Power Company; Fall river; Dartmouth lakes; Kearney lakes, Pennant river; Gold river; Paradise river; Lequille river; Bloody creek stream. Power reports and the necessary plans and profiles are now in course of preparation for the above rivers.

In addition, all the larger water-power developments of the province, with one or two exceptions, and including all pulp-mills and all hydro-electric plants supplying various municipalities throughout the province, have been personally visited and inspected by Mr. Smith. Data with respect to existing plants are being secured from all possible sources.

Five new meteorological stations have been established by the Meteorological Service of Canada at the request of the commission, and records are now being secured at the following points: Baddeck, Bridgetown, Digby, Halifax, Kentville, Liverpool, Springhill, Sutherland river, Stillwater (Guysborough county), Sydney, Truro, Upper Stewiacke, Whitehead, Wolfville, Windsor, Yarmouth.

The Nova Scotia Water Power Commission has expressed itself as being in every way satisfied with the progress which has been made to date, and arrangements have been made whereby the present co-operative arrangement between this branch and the commission will be continued during the forthcoming year. It is intended that the present stream measurement work will be somewhat enlarged and that the power studies and surveys will be prosecuted vigorously.

RECLAMATION.

Mr. T. H. Dunn has continued the reclamation investigations outlined in last year's annual report.

The field work connected with the Carrot River project was continued throughout the past season. The excessive flood flow which occurred in the Saskatchewan river supplied valuable data as to the high-water conditions to be provided for in any reclamation works undertaken. On the other hand, the flood water caused many difficulties in the carrying out of the actual survey work. Sufficient information was, however, secured to confirm the general conclusions reached in the preceding year, i.e., that the district tributary to the Carrot, particularly that to the northwest of the river, forms a large and desirable area which may be reclaimed at any time at comparatively small cost by dyking and pumping, and that a complete survey of the whole is advisable.

The investigation into the proposal of lowering lake Winnipegosis, and thereby reclaiming the low lands lying around the west shores, was continued. The surveys confirmed the previous conclusions that the lowering of the lake could be accomplished as a part of a comprehensive scheme of navigation and power development between lakes Winnipegosis and Manitoba. It is not considered necessary that further surveys be made at the outlet of the lake or in the vicinity of Meadow Portage, with a view to investigating the possibilities of lowering the lake, until such time as actual construction operations are contemplated. A reconnaissance of the shores of the lake with a view to determining the extent and value of the land which could be reclaimed would be advisable.

The McLaren tract which lies to the west of the Winnipeg river, extending from lake Winnipeg south as far as township 12 and west as far as range 8, east of the Principal meridian, was further investigated by Mr. Dunn. In view of the extent of the area involved and the limited time available, only restricted field investigations were possible. Considerable drainage work is already under construction throughout this district. There are, however, large areas which have not as yet been touched, and a comprehensive and co-ordinating survey of the entire district affected is essential to the proper treatment of the whole situation.

Extensive investigations into the low-lying lands along the borders of the lake of the Woods were made during the past season. This is one of the pressing questions receiving consideration by the International Joint Commission under the Lake of the Woods Reference. Mr. Dunn's investigations were made in this connection.

RECOMMENDATIONS FOR FUTURE WORK.

Reclamation problems and applications now before the Dominion Water-Power Branch requiring additional study during the forthcoming season as follows:—

1. A continuation of the Carrot river reclamation work is advisable in order to secure more accurate data as to all that is involved in the proposed reclamation of this district.

2. The extent of the lands benefited by the lowering of lake Winnipegosis should receive immediate study.

3. The McLaren tract should be covered systematically.

GENERAL.

Upper Pinawa power site on the Winnipeg river.—The completion of the Winnipeg river power studies disclosed the possibility of developing the unutilized portion of the Pinawa channel lying above the power station of the Winnipeg Electric Railway Company and below its control and diversion dams.

The normal drop in this reach of the Pinawa channel is in the neighbourhood of 20 feet, and it is considered that at least 18 feet of this head can be concentrated into what has been named the Upper Pinawa site. Considering a flow of 8,000 cubic feet per second down the Pinawa channel will supply some 12,300 continuous 24-hour power available for distribution. The site is located about three miles above the existing plant and two and one-half miles below the control dam, and may be said to be located in the company's present headrace.

The water utilized by the existing plant is diverted into the Pinawa channel by means of the company's three diversion dams across the main river channel, and is completely controlled by the control dam at the head of the channel. This same water is available for utilization at the proposed new plant. As the new site is so intimately involved with the present plant of the company, and as an independent

plant could not be operated here without seriously interfering with the existing undertaking, the Winnipeg Electric Railway Company is seriously considering its development. The company has formally applied for the water-power privileges, and is making close investigation into the economic and engineering questions involved.

Du Bonnet Falls development.—Owing to the financial conditions arising from the war, the Winnipeg River Power Company have, up to the present, been unable to finance its power undertaking at the Du Bonnet falls on the Winnipeg river. Twelve miles of construction railway have been completed from the Lac du Bonnet branch of the Canadian Pacific railway to the site of the development, and a very considerable amount of additional office work has been carried on covering the detailed designs of the undertaking. The company are prepared to rush construction work as soon as the necessary financial arrangements can be made.

International Joint Commission.—The Lake of the Woods Reference before the International Joint Commission involves the question of storage regulation in the lake in the interests of the water-powers of the lower Winnipeg river in Manitoba. The question has involved many conflicting interests, such as navigation, fisheries, drainage, and the flooding of lands around the southern shores, and has been before the commission since 1912. The vital importance of utilizing the lake as a storage reservoir in the interests of the Winnipeg River powers has led the Dominion Water Power Branch to make a careful study of all those physical features in the vicinity of the lake outlets and borders which have a bearing on the question, and of the interests affected by a regulation of the lake surface in the interests of power. Accurate and continuous records of the discharge from the lake outlets have been continuously secured throughout the past year, and the consulting engineers of the commission have been supplied with exhaustive physical data relative to the various questions at issue.

Public hearings in connection with the reference have taken place at Warroad and Kenora in September, and at Winnipeg in February last. At these hearings the various affected interests submitted their arguments and statements. Full representations were made by the Dominion Water Power Branch as to the necessity of a substantial measure of storage in the lake in the interests of the powers on the river below.

No finding has as yet been made by the commission, and a further hearing is fixed to take place in Washington early in April.

J. T. JOHNSTON,
Chief Hydraulic Engineer.